GenCore version 5.1.6 Copyright (c) 1993 - 2003 Compugen Ltd.

OM nucleic - nucleic search, using sw model

August 14, 2003, 04:14:55 Run on:

; Search time 111 Seconds (without alignments) 5765.816 Million cell updates/sec

Title: rfect score: quence:

OLIGO\_NUC Gapop 60.0 , Gapext 60.0 Scoring table:

569978 seqs, 220691566 residues Searched:

0 Word size :

1139956 Total number of hits satisfying chosen parameters:

Minimum DB seq length: 0 Maximum DB seq length: 200000000

Post-processing: Listing first 45 summaries

Issued\_Patents\_NA:\* Database :

/cgn2\_6/ptodata/1/ina/5A\_COMB.seq:\*
/cgn2\_6/ptodata/1/ina/5B\_COMB.seq:\*
/cgn2\_6/ptodata/1/ina/Aa\_COMB.seq:\*
/cgn2\_6/ptodata/1/ina/6B\_COMB.seq:\*
/cgn2\_6/ptodata/1/ina/PcTUS\_COMB.seq:\*
/cgn2\_6/ptodata/1/ina/pcTUS\_COMB.seq:\*

Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

q

οy

g

ò

Sequence 1820, Ap Sequence 2140, Ap	Sequence 1419, Ap Sequence 9151, Ap	8929	Sequence 23, Appl Sequence 2, Appli	Sequence 1, Appli	Seguence 1076, Ap	Sequence 7005, Ap	Sequence 31, Appl	Sequence 16519, A	Sequence 5798, Ap	Sequence 10216, A	Sequence 9837, Ap	Sequence 5853, Ap	Sequence 9753, Ap	Sequence 7091, Ap
US-09-252-991A-1820 US-09-252-991A-2140	US-09-016-434-1419 US-09-252-991A-9151	US-09-252-991A-8929	US-09-516-914-23 3 US-09-103-840A-2	3 US-09-103-840A-1	US-09-252-991A-1076	US-09-252-991A-7005	US-09-501-115-31	US-09-252-991A-16519	US-09-252-991A-5798	US-09-252-991A-10216	US-09-252-991A-9837	US-09-252-991A-5853	US-09-252-991A-9753	US-09-252-991A-7091
2112 4 2283 4	2932 4 4143 4	4212 4	14272 4 4403765 3	11529	603 4	792 4	1308 4	1383 4	1488 4	1683 4	1818 4	1842 4	1893 4	2028 4
1.3	1 T	1.3	1.3	1.3 44	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
19	19 19	19	19	19	18	18	18	18	18	18	18	18	18	18
C 58	30 31	c 32	c 33 34	35	36	37	38	39	c 40	c 41	42	43	44	c 45

## ALIGNMENTS

NESULT 1   US-09-15-7861/C     Sequence 7861, Applic     Sequence 7861, Applic     Patent No. 6551795     GENERAL INFORMATION:     APPLICANT: Marc J.     TITLE OF INVENTION:     FILE REFERENCE: 107     CURRENT APPLICATION NU     FILE REFERENCE: 107     CURRENT FILING DATE:     PRIOR APPLICATION NU     PRIOR PRIOR PRIOR FILING DATE:     TYPE: DN O 7861     TYPE: DN A 7861     OUGHY MATCH     Best Local Similarity     Matches 1383; CONSET     COCCTCCGA     COCCTCCGA     COCCTCCGG     COC	ULT 1 09-252-991A-7861/c equence 7861, Application US/09252991A. equence 7861, Application US/09252991A. equence 7861, Application US/09252991A. equence 7861, Application US/09252991A. expected No. 6551795 ENERRAL INFORMATION: RAPLICAMY: MACC J. Rubenfield et al. APPLICAMY: MACC J. Rubenfield et al. APPLICAMY: NUCLEIC ACID AND AMINO ACID SEQUENCES RELATING TO PSEUDOMONAS TITLE OF INVENTION: REFERENCE: 107196.136 CURRENT APPLICATION NUMBER: US 60/074,788 PRIOR APPLICATION NUMBER: US 60/074,788 PRIOR APPLICATION NUMBER: US 60/094,190 PRIOR FILING DATE: 1998-07-27 NUMBER OF SEQ ID NOS: 33142 ELENGTH: 1401 TYPE: DNA TYPE: DNA ORGANISM: Pseudomonas aeruginosa	atch cal Similarity 99.7%; Pred. No. 0; 1383; Conservative 0; Mismatches 4; Indels 0; Gaps 0; 1383; Conservative 0; Mismatches 4; Indels 0; Gaps 0; 2 GTGCTGATCGCCTCGCCACTTGAAGCTGCGTTGAGGAGAGAGA
	/c 55 0N: F 0N: R 0N: NON: 1071 1071 1071 1071 107 NOW NOW E: 1	81.6%;

```
PSEUDOMONAS
                                                                                                                                                                                                                                                                                       146
                                                                                                                                                                                                                                                                                                                                                               266
                                                                                                                                                                                                                                                                                                         120
                                                                                                                                                                                                                                                                                                                            206
                                                                                                                                                                                                                                                                                                                                            180
                                                                                                                                                                                                                                                                                                                                                                                                    326
                                                                                                                                                                                                                                                                                                                                                                                                                      300
                                                                                                                                                                                                                                                                                                                                                                                                                                        386
                                                                                                                                                                                                                                                                                                                                                                                                                                                          360
                                                                                                                                                                                                                                                                                                                                                                                                                                                                              446
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  506
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   480
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       266
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                420
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           626
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                686
                                                                                                                                                                                                                                                                   9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                             GTCGGCCTCGGCAAGAGCGGCATGTCCCTGGTGCGCTACCTGGCGCGCCGCGGCTTGCCT
                                                                                                                                                                                                                                                                                                  TTCGCCGTGGTCGATACCCGGAGAACCCGGCGGGGCTGGCCACCCTGCGTGCCCAGTAT
                                                                                                                                                                                                                                                                                                                                    CTCTATGTCAGCCCCGGCTTGTCGCTGCGCACCCCTGCGCTGGTACAGGCCGCGCGAAA
                                                                                                                                                                                                                                                                                                                                                                                                                       CTCTACGTCAGCCCCGGCTTGTCGCTGCGCACCCCCGCGCTGGTACAGGCCGCGCGAAA
                                                                                                                                                                                                                                                                                                                                                                                                                                         GGCGTGCGCATCTCCGGTGACATCGATCTCTTCGCCCGCGCGGAGGCCCCCGATCGTC
                                                                                                                                                                                                                                                                                                                                                                                                                                                  GCCGCGGACAAGCGTGTCGCCGTCGGCGCAACCTCGGCACCCCGGCGCTCGACGTGCTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     GCCGCGGACAAGCGTGTCGCCGTCGGCGGCAACCTCGGCACCCGGCGCGCTCGACCTGCTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       GCCGACGACATCGAGCTGTACGTGTTGGAGCTGTCGAGCTTCCAGCTGGAAACCTGCGAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                CGCCTCAACGCCGAGGTGGCGACCGTGCTGAACGTCAGCGAAGACCATATGGATCGCTAC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      GTGGTGAATCGCGCCGATGCCCTGACCCGACCGCTGATCGCCGATACCGTGCCGTGCTGG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             27 AGCTGCGTTGAGGACGAAGAGAGCATGAGCCTGATCGCCTCCGACCACTTCCGCATCGTT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  GACGCCATGGCTGACTACCACCTGGCCAAGCACCGGATCTTCCGCGGTGCCCGCCAGGTC
                                                          ဝူ
                                                                                                                                                                                                                                  Gaps
                                            TITLE OF INVENTION: NUCLEIC ACID AND ANINO ACID SEQUENCES RELATING TITLE OF INVENTION: NUCLEIC ACID AND ANINO ACID SEQUENCES RELATING TITLE OF INVENTION: AERUGINOSA FOR DIAGNOSTICS AND THERAPEUTICS CURRENT APPLICATION NUMBER: US/09/252,991A CURRENT FILING DATE: 1999-02-18
PRIOR FILING DATE: 1998-02-18
PRIOR FILING DATE: 1998-02-18
PRIOR FILING DATE: 1998-07-27
NUMBER OF SEQ ID NOS: 33142
SEQ ID NO 7702
                                                                                                                                                                                                                                 ö
                                                                                                                                                                                                             Length 1371
                                                                                                                                                                                                                                4
                                                                                                                                                                                                              DB
                                                                                                                                                                                                             Score 1167; DE
Pred. No. 0;
0; Mismatches
               sequence 7702, Application US/09252991A Patent No. 6551795 GENERAL INFORMATION:
                                                                                                                                                                                   : Pseudomonas aeruginosa
                                                                                                                                                                                                             80.5%;
                                                                                                                                                                                                                                 Conservative
                                                                                                                                                                                                                       Best_Local Similarity
Matches 1367; Conser
          -09-252-991A-7702
                                                                                                                                                                                          US-09-252-991A-7702
                                                                                                                                                                         TYPE: DNA ORGANISM:
                                                                                                                                                                                                                                                                    Н
                                                                                                                                                                                                                                                                                      87
                                                                                                                                                                                                                                                                                                         61
                                                                                                                                                                                                                                                                                                                            147
                                                                                                                                                                                                                                                                                                                                            121
                                                                                                                                                                                                                                                                                                                                                               207
                                                                                                                                                                                                                                                                                                                                                                                  181
                                                                                                                                                                                                                                                                                                                                                                                                     267
                                                                                                                                                                                                                                                                                                                                                                                                                      241
                                                                                                                                                                                                                                                                                                                                                                                                                                         327
                                                                                                                                                                                                                                                                                                                                                                                                                                                          301
                                                                                                                                                                                                                                                                                                                                                                                                                                                                              387
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                361
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   421
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       507
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            267
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              541
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 627
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   501
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     687
                                                                                                                                                                                                               Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  447
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         481
                                                                                                                                                                LENGTH
                                                                                                                                                                                                                                                                   g
                                                                                                                                                                                                                                                                                      ò
                                                                                                                                                                                                                                                                                                         셤
                                                                                                                                                                                                                                                                                                                                          g
                                                                                                                                                                                                                                                                                                                                                               ò
                                                                                                                                                                                                                                                                                                                                                                              셤
                                                                                                                                                                                                                                                                                                                                                                                                                    셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                      g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                             à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             셤
                                                                                                                                                                                                                                                    ò
                                                                                                                                                                                                                                                                                                                            à
                                                                                                                                                                                                                                                                                                                                                                                                 ò
                                                                                                                                                                                                                                                                                                                                                                                                                                        ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ŏ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  엄
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                           1141
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1381
                                                                                                                                                                                                                                                                                                                                                                               962 CGGCCTGGCTCATCGCTGCCAGTGGGTACGCGAGCGCAGGGCGTGAGCTACTACGACGA 1021
                                                                                                                                                                                                                                                                                                                                                                                                                      1081
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                1201
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       968
                                                                                             848
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  188
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   GATTGCCCAGGCACTGGGCAACGCGGTACCGCTGGTGCGCGTCGCAACGCTGGACGAAGC 1261
                                     481
                                                        908
                                                                           541
                                                                                                                                   788
                                                                                                                                                      661
                                                                                                                                                                       728
                                                                                                                                                                                                            668
                                                                                                                                                                                                                                                                                      548
                                                                                                                                                                                                                                                                                                                                                                                                    368
                                                                                                                                                                                                                                                                                                                                                                                                                                        308
                                                                                                                                                                                                                                                                                                                                                                                                                                                                             248
 421
                                                                                                                601
                                                                                                                                                                                          721
                                                                                                                                                                                                                                                  608
                                                                                                                                                                                                                                                                                                         901
                                                                                                                                                                                                                                                                                                                          488
                                                                                                                                                                                                                                                                                                                                            961
                                                                                                                                                                                                                                                                                                                                                               428
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      128
                                                                                                                                                                                                                                781
                                                                                                                                                                                                                                                                    841
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               œ
                                                                         GAGCTTCCAGCTGGAAACCTGCGATCGCCTCAACGCCGAGGTGGCGACCGTGCTGAACGT
                                                                                                                                                    CAGCGAAGACCATATGGATCGCTACGACGGCATGGCTGACTACCACCTGGCCAAGCACCCG
                                                                                                                                                                      CAGCGAAGACCATATGGATCGCTACGACGGCATGGCTGACTACCACCTGGCCAAGCACCG
                                                                                                                                                                                                                                        GCGCGAGCCGGTCGCGCCTTCTGCCGGGCGGTGGTACTGCTTGGCCGTGACGCCGGGCT
          CACCCTGGTGGGCGAAATGGCGGTGGCCGCGGACAAGCGTGTCGCCGTCGGCGGCAACCT
                                                                                                                                 GAGCTTCCAGCTGGAAACCTGCGATCGCCTCAACGCCGAGGTGGCGACCTGCTGAACGT
                                                                                                                                                                                                   CGGCCTGATCGAGGAGGAGGCCCAGAAGTGGCTGGCGTTCCAGTTCGACAAGCTGCTGCC
                                                                                                                                                                                                                                                                                                        GGTTGGCGAACTGAAGATCCGTGGCGCCCACAACTATTCCAACGCGCTCGCCGCGCTGGC
                                                                                                                                                                                                                                                                                                                 TTCCAAGGCCACCAACGTCGGCGCCGCCTGGCGGCGATCGAGGGGCTGGGTGCCGACAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                          CGACGGCAAGCTGGTGCTGCTCGCCGGCGGAGACGGCAAGGGCGCCGGATTTCCATGACCT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           CCGCGAGGCGAAGGCCCCGATCGTCGCCATCACCGGTTCCAACGCGAAGAGCACGTGAC
                                                                                                                                                                                         GATCTTCCGCGGTGCCCGCCAGGTCGTGAATCGCGCCGATGCCCTGACCCGACCGCT
                                                                                                                                                                                                                               GATCGCCGATACCGTGCCGTGCTCGTTCGGCCTGAACAAGCCGGACTTCAAGGCTTT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             AGAGGAG 1388
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    AGAGGAG
                                                                                                                                                                                                                                                                                                                                                             487
                                                                                                                                                                                                                                                                                                                                                                                                                     1022
                                                                                                                                847
                                                                                                                                                                                                                                                                                                                                                                                                                                                         1082
                  1027
                                    422
                                                      196
                                                                          482
                                                                                                                                                                                                                                                                  782
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1142
362
                                                                                           907
                                                                                                              542
                                                                                                                                                    602
                                                                                                                                                                     787
                                                                                                                                                                                         662
                                                                                                                                                                                                           727
                                                                                                                                                                                                                              722
                                                                                                                                                                                                                                                 667
                                                                                                                                                                                                                                                                                    607
                                                                                                                                                                                                                                                                                                       842
                                                                                                                                                                                                                                                                                                                        547
                                                                                                                                                                                                                                                                                                                                           902
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               247
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   1202
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        1262
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         127
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            1322
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 1382
                                                                                                                                                                                                                                                                                                                                                                                                  427
                                                                                                                                                                                                                                                                                                                                                                                                                                       367
                                                                                                                                                                                                                                                                                                                                                                                                                                                                            307
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    187
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              67
                 유
                                                    g
                                                                         ò
                                                                                          g
                                                                                                                               a
                                                                                                                                                   ò
                                                                                                                                                                     8
                                                                                                                                                                                                          g
                                                                                                                                                                                                                                                                                     8
                                                                                                                                                                                                                                                                                                       ò
                                                                                                                                                                                                                                                                                                                        g
                                                                                                                                                                                                                                                                                                                                          ò
                                                                                                                                                                                                                                                                                                                                                            g
                                                                                                                                                                                                                                                                                                                                                                                                g
                                    å
                                                                                                              à
                                                                                                                                                                                        ð
                                                                                                                                                                                                                              à
                                                                                                                                                                                                                                                                                                                                                                              ð
                                                                                                                                                                                                                                                                                                                                                                                                                     ò
                                                                                                                                                                                                                                                                                                                                                                                                                                     셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                        à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                          원
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      엄
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ò
```

ò

ö

08:06:32 2003

Fri Aug 15

```
GENERAL INFORMATION:
APPLICANT: MARC J. Rubenfield et al.
APPLICANT: MARC J. Rubenfield et al.
TITLE OF INVENTION: NUCLEIC ACID AND AMINO ACID SEQUENCES RELATING TO PSEUDOMONAS:
TITLE OF INVENTION: ARENGINOSA FOR DIAGNOSTICS AND THERAPEUTICS
FILE REFERENCE: 107196.136
CURRENT APPLICATION NUMBER: US/09/252,991A
CURRENT FILING DATE: 1999-02-18
PRIOR FILING DATE: 1998-02-18
PRIOR FILING DATE: 1998-02-18
PRIOR FILING DATE: 1998-02-18
PRIOR FILING DATE: 1998-07-27
NUMBER OF SEQ ID NOS: 33142
SEQ ID NO 7928
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     1072
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   1132
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         1311
                                                                                                                                                                                                                                   1071
                                                                                                                                                                                                                                                                                                1131
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 445
                                                                                                                                                                      952 AGCCGTTTTCCGGCCTGGCTCATCGCTGCCAGTGGGTACGCGAGCGGCAGGGCGTGAGCT 1011
                                                                                                                                                                                                                                                                 268
                                                                                                                                                                                                                                                                                                                              208
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    505
                                                                                                       951
                                                                                                                                                                                                                                                                                                                                                                                                                                                        88
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       28
                                                           CCGCGCTGGCGCTGGGCCATGCGGTCGGCCTGCCGTTCGACGCCATGCTCGGCGCGCTGA
                                                                                                                                                                                        1012 ACTACGACGATTCCAAGGCCACCAACGTCGGCGCCGCCCTGGCGGCGATCGAGGGGCTGG
                                                                                                                                                                                                                                                  TCCATGACCTGCGCGGGCCGGTCGCGCCTTCTGCCGGGCGGTGGTACTGCTTGGCCGTG
                                                                                                                                                                                                                                                                                                                                                                                             ACCCCGGCTGATTGCCCAGGCACTGGGCAACGCGGTACCGCTGGTGCGCGTCGCAACGC
                                                                                                                                                                                                                                                                                                                                                                                                                                           147 ACGCCGGGCTGATTGCCCAGGCACTGGGCAACGCGGTACCGCTGGTGGCGTCGCAACGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         1252 TGGACGAAGCAGTCCGGCAGGCCGCCGAGCTGGCCCGCGAAGGCGGATGCGGTGCTGTTGT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      1013 CTACGACGATTCCAAGGCCACCACCACGCGCGCCCTGGCGGGGATCGAGGGGTGGG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    564 CTACGACGATTCCAAGGCCACCAACGTCGGCGCCGCCCTGGCGGCGATCGAGGGGCTGGG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     1073 TGCCGACATCGACGGCAAGCTGGTGCTGCTCGCCGGCGGAGACGGCAAGGGCGCGCGATTT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                AGCTGCTGCCGGTTGGCGAACTGAAGATCCGTGGCGCCCACAACTATTCCAACGCGCTCG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Gaps
                                                                                                                                                                                                                                                                                                                                                                            ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Length 564;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       0; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        30.2%; Score 438; DB 4; L6
100.0%; Pred. No. 2.5e-192;
ive 0; Mismatches 0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      1312 CGCCGGCCTGCGCGAGCCTGGACATGT 1338
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        CGCCGGCCTGCGCGAGCCTGGACATGT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ; Sequence 7928, Application US/09252991A; Patent No. 6551795
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Pseudomonas aeruginosa
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      al Similarity 100. 438; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    RESULT 4
US-09-252-991A-7928/C
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ; ORGANISM: #Seudo
US-09-252-991A-7928
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            LENGTH: 564
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Query Match
Best Local Si
Matches 438;
                                                                                                                                                                                                                                                                                                                                                               1132
                                                                                                                                                                                                                                                                                                                                                                                                                            1192
                                                                                                                                                                                                                                                                                                1072
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       87
              267
                                              832
                                                                                                         892
                                                                                                                                        447
                                                                                                                                                                                                     387
                                                                                                                                                                                                                                                                   327
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    27
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              TYPE: DNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ORGANISM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      g
                                                                                                                                셤
                                                                                                                                                                                                                                                               a
                                                                                                                                                                                                                                                                                                  à
                                                                                                                                                                                                                                                                                                                         g
                                                                                                                                                                                                                                                                                                                                                             δ
                                                                                                                                                                                                                                                                                                                                                                                           qq
                                                                                                                                                                                                                                                                                                                                                                                                                                                        a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ŏ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ŏ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            g
                                            δ
                                                                        g
                                                                                                       ò
                                                                                                                                                                        ò
                                                                                                                                                                                                  8
                                                                                                                                                                                                                                  ογ
                                                                                                                                                                                                                                                                                                                                                                                                                          δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Sequence 7787, Application US/09252991A

GENERAL INFORMATION:

TITLE OF INVERTION: NUCLEIC ACID AND AMINO ACID SEQUENCES RELATING TO PSEUDOMONAS

TITLE OF INVERTION: APRUGINOSA FOR DIAGNOSTICS AND THERAPEUTICS

CURRENT PILING DATE: 1099-02-18

PRIOR PPLICATION NUMBER: US 60/074,788

PRIOR PPLICATION NUMBER: US 60/094,190

PRIOR PLILING DATE: 1998-07-27

NUMBER OF SEQ ID NOS: 33142

SEQ ID NO 7787
                                                                                                                                                                                                                                                                                                                                                                                         1021 GCCTGGCGGCGATCGAGGGCTGGGTGCCGACATCGACGCACAGCTGGTGCTGCTCGCC 1080
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   1227 GTACCGCTGGTGCGCGTCGCAACGCTGGACGAGCAGTCCGGCAGGCCGCCGAGCTGGCC 1286
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      1201 GTACCGCTGGTGCGCGTCGCAACGCTGGAACGAAGTAGTCCGGCAGGCCGCCGCGGCTGGCC 1260
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  CGCGAAGGCGATGCGGTGCTGTTGTCGCCGGCCTGCGGAGCCTGGACATGTTCAAGAAC 1346
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   1261 CGCGAAGGCGATGCGGTGCTGTTGTCGCCGGCCTGCGCGAGCCTGGACATGTTCAAGAAC 1320
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ö
                                                                                                                                                                                                                                                                   GTACGCGAGCGGCGAGGCGTGAGCTACGACGATTCCAAGGCCACCAACGTCGGCGCC 1046
                                                                                                                                                                                                                                                                                                                              GCCCTGGCGGCGATCGAGGGGCTGGCTGCCGACATCGACGGCAAGCTGGTGCTGCTCGCC 1106
                                                                                                                                                                                                                    900
                                                                           998
                                                                                                                                        926
                                                                                                                                       GCCCACAACTATTCCAACGCGCTCGCCGCTGGCGCTGGGCCATGCGGTCGGCCTGCCG
                                                                                                                                                                        GCCCACACTATTCCAACGCGCTCGCCGCGCTGGCGCTGGGCCCATGCGGTCGGCCTGCCG
                               TCGTTCGCCCTGAACAAGCCGGACTTCAAGGCTTTCGGCCTGATCGAGGAAGACGGCCAG
                                                                           AAGTGGCTGGCGTTCCAGTTCGACAAGCTGCTGCCGGTTGGCGAACTGAAGATCCGTGGC
                                                                                          TTCGACGCCATGCTCGCCGCGCTGAAGGCGTTTTCCGGCCTGGCTCATCGCTGCCAGTGG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 1347 TTCGAAGAACGCGGACGCCTGTTCGCCAAAGCCGTAGAGGAGCTAGCGTGA 1397
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Query Match 39.1%; Score 567; DB 4; Length 567; Best Local Similarity 100.0%; Pred. No. 1e-251; Matches 567; Conservative 0; Mismatches 0; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ; ORGANISM: Pseudomonas aeruginosa US-09-252-991A-7787
                                                                                                                                                                                                                                  901
                                                                                                                                                                                                                                                                                                                              1047
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  1287
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               1321
                                                                                                                                                                                                                                                                                               961
                                                                        807
                                                                                                      781
                                                                                                                                                                    841
                                                                                                                                                                                                    927
                                                                                                                                                                                                                                                                 987
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         TYPE: DNA
             747
                                          721
                                                                                                                                       867
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ò
                                         g
                                                                                                    g
                                                                                                                                                                                                                                   ద
                                                                                                                                                                                                                                                                                                                           ŏ
                                                                                                                                                                                                                                                                                                                                                          g
                                                                                                                                                                                                                                                                                                                                                                                         ò
                                                                                                                                                                                                                                                                                                                                                                                                                     셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                        õ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ö
              ö
                                                                        ò
                                                                                                                                   à
                                                                                                                                                                                                                                                                 ò
                                                                                                                                                                                                                                                                                               셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ö
```

ö

us-09-701-229-1.oliq.rni

```
Sequence 7552, Application US/09252991A

Sequence 7552, Application US/09252991A

Patent No. 6551795

GENERAL INFORMATION:
APPLICANT: MARC J. Rubenfield et al.
ATITLE OF INVENTION: NUCLEIC ACID AND AMINO ACID SEQUENCES RELATING TO PSEUDOMONAS

TITLE OF INVENTION: AERGINOSA FOR DIAGNOSTICS AND THERAPEUTICS

TITLE OF INVENTION: NUMBER: US/09/252,991A

CURRENT APPLICATION NUMBER: US 60/074,788

PRIOR FILING DATE: 1998-02-18

PRIOR FILING DATE: 1998-02-18

PRIOR FILING DATE: 1998-02-18

PRIOR FILING DATE: 1998-07-27

NUMBER OF SEQ ID NOS: 33142

SEQ ID NOS: 33142
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   GENERAL INFORMATION:
APPLICANT: Marc J. Rubenfield et al.
APPLICANT: Marc J. Rubenfield et al.
TITLE OF INVENTION: ABRUGINOSA FOR DIAGNOSTICS AND THERAPEUTICS
TITLE OF INVENTION: ABRUGINOSA FOR DIAGNOSTICS AND THERAPEUTICS
FILE REFERENCE: 107196.136
CURRENT APPLICATION NUMBER: US/09/252,991A
CURRENT FILING DATE: 1999-02-18
PRIOR APPLICATION NUMBER: US 60/074,788
PRIOR PILING DATE: 1998-02-18
PRIOR PILING DATE: 1998-02-18
PRIOR PILING DATE: 1998-02-18
NUMBER OF SEQ ID NOS: 33142
SEQ ID NOS: 33142
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           121 GCTACCTGGCGCGCGCGCGCTTGCCTTTCGCCGTGGTCGATACCCGAGAGAACCCGCGG 180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           240
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              61 GCTACCTGGCGCGCGCGCGCTTGCCTTTCGCCGTTGTCGATACCCGAGAGAACCCGCCGG 120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              61 TCGCCTCCGACCACTTCCGCATCGTTGTCGGCCTCGGCAAGAGCGGCATGTCCCTGGTGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    1 TCGCCTCCGACCACTTCCGCATCGTTGTCGGCCTCGGCAAGAGCGGCATGTCCCTGGTGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         181 AGCTGGCCACCCTGCGTGCCCAGTATCCGCAGGTGGAAGTGCGTTGCGGCGAACTCGACG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  2 GTGCTGATCGGCCTCGCCACCTTGAAGCTGCGTTGAGGACGAAGAGAGCATGAGCCTGAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Length 1170;
                                                                                                                                                                                                                                                                                                                                                                                                                                                Length 360;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            8.3%; Score 120; DB 4; I larity 100.0%; Pred. No. 5.5e-46; Conservative 0; Mismatches 0;
                                                                                                                                                                                                                                                                                                                                                                                                                                              Score 160; DB 4;
Pred. No. 2.3e-64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        241 CCGAGTTCCTCTGCTCCGCCGCGAACTCTA 271
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               181 CCGAGTTCCTCTGCTCCGCCCGCGAACTCTA 211
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      0; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         RESULT 7
8-09-252-991A-7929/c
; Sequence 7929, Application US/09252991A
; Patent No. 6551795
                                                                                                                                                                                                                                                                                                                                                                                   ORGANISM: Pseudomonas aeruginosa
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Pseudomonas aeruginosa
                                                                                                                                                                                                                                                                                                                                                                                                                                            11.0%;
99.5%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Best Local Similarity 99.5
Matches 210; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Query Match
Best Local Similarity
RESULT 6
US-09-252-991A-7552
                                                                                                                                                                                                                                                                                                                                                                                                          US-09-252-991A-7552
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        US-09-252-991A-7929
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               LENGTH: 1170
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    120;
                                                                                                                                                                                                                                                                                                                                                                                                                                                  Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ద
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           á
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           RESULT 5
-09-252-991A-7624
Sequence 7624, Application US/09252991A
Bequence 7624, Application US/09252991A
Fatent No. 6551795
GENERAL INFORMATION:
TILLE OF INVENTION: NUCLEIC ACID AND AMINO ACID SEQUENCES RELATING TO PSEUDOMONAS;
TILLE OF INVENTION: AERGINGSA FOR DIAGNOSTICS AND THERAPEUTICS
TILLE OF INVENTION: ASRCGINGSA FOR DIAGNOSTICS AND THERAPEUTICS
CURRENT APPLICATION NUMBER: US 60/074,788
PRIOR APPLICATION NUMBER: US 60/074,788
PRIOR FILING DATE: 1999-02-18
PRIOR APPLICATION NUMBER: US 60/094,190
PRIOR FILING DATE: 1998-02-18
PRIOR FILING DATE: 1998-07-27
SEQ ID NO 7624
SEQ ID NO 7624
LENGTH: 1359
                                                                                                 1252
                                                                                                                                                                           1253 GGACGAAGCAGTCCGGCAGGCCGCCGAGCCGCGAAGGCGATGCGGTGCTGTTGTC 1312
                                                                                                                                                                                                                                                                                                                                        1373 CAAAGCCGTAGAGGAGCTAGCGTGATGCTGTCGGTGTTGCGCCCCTTCCCGTCGCCGTG 1432
                                                                                                                                                                                                                                                              1313 GCCGGCCTGCCGCGAGCCTGGACATGTTCAAGAACTTCGAAGAACGCGGACGCCTGTTCGC 1372
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         1193 CGCCGGGCTGATTGCCCCAGGCACTGGGCAACGCGGTACCGCTGGTGCGCGTCGCAACGCT 1252
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        1253 GGACGAAGCAGTCCGGCAGGCCGCCGAGCTGGCCGCGAAGGCGATGCGGTGCTGTTGTC 1312
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    1373 CAAAGCCGTAGAGGAGCTAGCGTGATGCTGTCGGTGGCCCCCTTCCCGTCGCCCGTG 1432
                                                                                                                                                                                                                        265
                                                                                                                                                                                                                                                                                                      205
                                                                                                                                                                                                                                                                                                                                                             204 CAAAGCGTAGAGGAGCTAGCGTGATGCTGGTCGGTGTTGCGCCCCTTCCCGTCGCCGCTG 145
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    9
              CCATGACCTGCGCGGGCGGTCGCGGCGTTCTGCCGGGGGGGTGGTACTGCTTGGCCGTGA
                                      1193 CGCCGGGCTGATTGCCCAGGCACTGGGGAACGCGGTACCGCTGGTGCGCGTCGCAACGCT
                                                                                                                    181 CAAAGCCGTAGAGGAGCTAGCGTGATGCTGGGTGTTGCGCCCCTTCCCGTCGCCGCTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Length 1359;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         17.8%; Score 258; DB 4; Le
100.0%; Pred. No., 1.6e-109;
.ive 0; Mismatches 0;
                                                                                                                                                                                                                                                                                                                                                                                                                       1433 TTGAGCCGCCACGCATC 1450
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     1433 TTGAGCCGGCACGCCATC 1450
                                                                                                                                                                                                                                                                                                                                                                                                                                                144 TTGAGCCGCCACGCCATC 127
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          TTGAGCCGCCACGCCATC 258
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Best Local Similarity 100.0
Matches 258; Conservative
              1133
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Query Match
                                                  셤
                                                                                             ò
                                                                                                                                   셤
                                                                                                                                                                           à
                                                                                                                                                                                                                    g
                                                                                                                                                                                                                                                                                              ద
                                                                                                                                                                                                                                                                                                                                          à
                                                                                                                                                                                                                                                                                                                                                                                a
                                                                                                                                                                                                                                                              ð
                                                                                                                                                                                                                                                                                                                                                                                                                       ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     õ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ð
```

Ŋ

```
Sequence 1743, Application US/09252991A
Patent No. 6551795
GEMERAL INFORMATION:
GENERAL INFORMATION:
TITLE OF INVENTION: NUCLEIC ACID AND AMINO ACID SEQUENCES RELATING TO PSEUDOMONAS
TITLE OF INVENTION: AERUGINOSA FOR DIAGNOSTICS AND THERAPEUTICS
FILLE REFERENCE: 107196.138
CURRENT APPLICATION NUMBER: US/09/252,991A
CURRENT FILING DATE: 1999-02-18
PRIOR APPLICATION NUMBER: US 60/074,788
PRIOR APPLICATION NUMBER: US 60/094,190
PRIOR FILING DATE: 1998-07-27
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Sequence 12452, Application US/09252991A
Patent No. 6551795
GENERAL INFORMATION:
APPLICANT: MAIC J. Rubenfield et al.
TITLE OF INVENTION: ARGUGINOSA FOR DIAGNOSTICS AND THERAPEUTICS
FILE OF INVENTION: ARGUGINOSA FOR DIAGNOSTICS AND THERAPEUTICS
CURRENT APPLICATION NUMBER: US/09/252,991A
COURRENT FILING DATE: 1999-02-18
PRIOR FILING DATE: 1998-02-18
                                                             GENERAL INFORMATION:
APPLICANT: MARC J. Rubenfield et al.
APPLICANT: MARC J. Rubenfield et al.
TITLE OF INVENTION: NUCLEIC ACID AND AMINO ACID SEQUENCES RELATING TO PSEUDOMONAS
TITLE OF INVENTION: ABCIGINOSA FOR DIAGNOSTICS AND THERAPEUTICS
FILE REFERENCE: 107196.136
CURRENT APPLICATION NUMBER: US 60/074,788
PRIOR APPLICATION NUMBER: US 60/094,190
PRIOR FILING DATE: 1998-07-18
PRIOR FILING DATE: 1998-07-27
NUMBER OF SEQ ID NOS: 33142
SEQ ID NO 9277
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 DB 4; Length 405;
18;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Length 204;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Query Match 1.3%; Score 19; DB 4; Best Local Similarity 100.0%; Pred. No. 19; Matches 19; Conservative 0; Mismatches C
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 1.3%; Score 19; DB
llarity 100.0%; Pred. No. 18;
Conservative 0; Mismatches
Sequence 9277, Application US/09252991A
Patent No. 6551795
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            1040 cgccccccccccccccccc 1058
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        821 CCAGTTCGACAAGCTGCTG 839
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  138 CCAGTTCGACAAGCTGCTG 156
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            98 CGCGCCCCTGGCGCG 80
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ORGANISM: Pseudomonas aeruginosa
US-09-252-991A-9277
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Pseudomonas aeruginosa
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            NUMBER OF SEQ ID NOS: 33142
SEQ ID NO 1743
LENGTH: 405
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Local Similarity
nes 19; Conserv
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 US-09-252-991A-12452/c
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             US-09-252-991A-1743/c
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ; ORGANISM: Pseud
US-09-252-991A-1743
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                TYPE: DNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        TYPE: DNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Best Loca
Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    RESULT 12
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Sequence 7623, Application US/09252991A
Patent No. 6551795
GENERAL INFORMATION:
GENERAL INFORMATION:
GENERAL INFORMATION:
TITLE OF INVENTION: AERUGINOSA FOR DIAGNOSTICS AND THERAPEUTICS
TITLE OF INVENTION: AERUGINOSA FOR DIAGNOSTICS AND THERAPEUTICS
CURRENT APPLICATION NUMBER: US/09/252,991A
CURRENT FILLING DATE: 1999-02-18
PRIOR PILLING DATE: 1998-02-18
PRIOR PILLING DATE: 1998-02-18
PRIOR FILLING DATE: 1998-02-17
PRIOR FILLING DATE: 1998-07-27
                                                                                                                                                                                                                                                                                   GENERAL INFORMATION:
APPLICANT: Marc J. Rubenfield et al.
APPLICANT: Marc J. Rubenfield et al.
APPLICANT: Marc J. Rubenfield et al.
TITLE OF INVENTION: NUCLEIC ACID AND AMINO ACID SEQUENCES RELATING TO PSEUDOMONAS TITLE OF INVENTION: ABEUGINOSA FOR DIAGNOSTICS AND THERAPEUTICS
FILE REFERENCE: 107196.136
CURRENT APPLICATION NUMBER: US/09/252,991A
CURRENT APPLICATION NUMBER: US 60/074,788
PRIOR APPLICATION NUMBER: US 60/074,788
PRIOR APPLICATION NUMBER: US 60/094,190
PRIOR FILING DATE: 1998-02-18
PRIOR APPLICATION NUMBER: US 60/094,190
NUMBER OF SEQ ID NOS: 33142
SEQ ID NO 7860.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ó
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          1389 CTAGCGTGATGCTGTCGGTGTTGCGCCCCTTCCCGTCGCCGCTGTTGAGCCGGCACGCCA 1448
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     1287 CTAGCGTGATGCTGTCGGTGTTGCGCCCCTTCCCGTCGCCGCTGTTGAGCCGGCACGGCA 1228
                62 CGCCTCCGACCACTTCCGCATCGTTGTCGGCCTCGGCAAGAGCGGCATGTCCCTGGTGCG 121
                                                   60 CGCCTCCGACCACTTCCGCATCGTTGTTGTCGCCTCGGCAAGAGCGGCATGTCCCTGGTGCG 1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ;
0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Length 1404;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Length 1287;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Query Match 4.3%; Score 62; DB 4; Length 128
Best Local Similarity 100.0%; Pred. No. 2.7e-19;
Matches 62; Conservative 0; Mismatches 0; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1369 GTGCTGATCGCCTCGCCACCTTGAAGCTGCGTTGA 1404
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      2 GIGCIGATCGGCCTCGCCACCTIGAAGCTGCGTTGA 37
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Query Match 2.5%; Score 36; DB 4; L
Best Local Similarity 100.0%; Pred. No. 2.5e-07;
Matches 36; Conservative 0; Mismatches 0;
                                                                                                                                                                                                                        Sequence 7860, Application US/09252991A Patent No. 6551795
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ; TYPE: DNA
; ORGANISM: Pseudomonas aeruginosa
US-09-252-991A-7623
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ; ORGANISM: Pseudomonas aeruginosa US-09-252-991A-7860
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     1449 TC 1450
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            1227 TC 1226
                                                                                                                                                                                                     US-09-252-991A-7860/c
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  RESULT 10
US-09-252-991A-9277
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       -09-252-991A-7623
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           TYPE: DNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ър.
                                                          ୍ଧ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ŏ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      셤
                ŏ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             δ
```

ö

Gaps

ö

ö

Gaps

ö

```
US-09-252-991A-13195
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     US-09-072-596-263
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                à
                                                                                                                                                                                                                                                                                                                                                                                                                                          Sequence 8304, Application US/09252991A
Patent No. 6551795
GENERAL INFORMATION:
FAPELICANT: Marc J. Rubenfield et al.
TITLE OF INVENTION: NUCLEIC ACID AND AMINO ACID SEQUENCES RELATING TO PSEUDOMONAS TITLE OF INVENTION: AERUGINOSA FOR DIAGNOSTICS AND THERAPEUTICS
FILE REFERENCE: 107196.136
CURRENT APPLICATION NUMBER: US/09/252,991A
CURRENT FILING DATE: 1999-02-18
PRIOR PAPLICATION NUMBER: US 60/074,788
PRIOR PAPLICATION NUMBER: US 60/094,190
PRIOR FILING DATE: 1999-07-27
PRIOR FILING DATE: 1999-07-27
                                                                                                                                                                                                                                                          ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ö
                                                                                                                                                                                                                                                          Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    APPLICANT: Reed, Steven G.
APPLICANT: Skelky, Yasir A.W.
APPLICANT: Skelky, Yasir A.W.
APPLICANT: Dillon, Davin C.
APPLICANT: Campos **Neto, Antonia
APPLICANT: Campos **Neto, Antonia
APPLICANT: Houghton, Raymond
APPLICANT: Twardzik, Daniel R.
APPLICANT: Twardzik, Daniel R.
APPLICANT: Hendrickson, Ronald C.
APPLICANT: Hendrickson, Ronald C.
APPLICANT: Hendrickson, Ronald C.
APPLICANT: HOUGHOUS: 350
CORRESPONDENCES: 350
CORRESPONDENCES: 350
CORRESPONDENCES: ADDRESS:
ADDRESSEE: SEED and BERRY LLP
STREET: 6500 Columbia Center, 701 Fifth Avenue
                                                                                                                                                                                                                                                        ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ö
                                                                                                                                                                                                         DB 4; Length 414;
18;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          DB 4; Length 489;
18;
                                                                                                                                                                                                                                                        Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Query Match 1.3%; Score 19; DB Best Local Similarity 100.0%; Pred. No. 18; Matches 19; Conservative 0; Mismatches
                                                                                                                                                                                                       Query Match 1.3%; Score 19; DB Best Local Similarity 100.0%; Pred. No. 18 Matches 19; Conservative 0; Mismatches
       US 60/094,190
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Sequence 263, Application US/09072596
Patent No. 6458366
GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                821 CCAGTTCGACAAGCTGCTG 839
                                                                                                                                                                                                                                                                                                                       255 CCAGTTCGACAAGCTGCTG 237
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              821 CCAGTTCGACAAGCTGCTG 839
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ; TYPE: DNA
; ORGANISM: Pseudomonas aeruginosa
US-09-252-991A-12452
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   TYPE: DNA ORGANISM: Pseudomonas aeruginosa
PRIOR APPLICATION NUMBER:
PRIOR FILING DATE: 1998-07
NUMBER OF SEQ ID NOS: 3314
SEQ ID NO 12452
LENGTH: 414
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       COMPUTER READABLE FORM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               NUMBER OF SEQ ID NOS:
SEQ ID NO 8304
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Washington
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          COUNTRY: USA
ZIP: 98104-7092
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         STREET: 6300 CCCITY: Seattle STATE: Washingt
                                                                                                                                                                                                                                                                                                                                                                                                                            US-09-252-991A-8304
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             US-09-252-991A-8304
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               US-09-072-596-263
                                                                                                                                                                                                                                                                                                ö
                                                                                                                                                                                                                                                                                                                                        a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        g
```

```
Sequence 13195, Application US/09252991A

Patent No. 651795

GENERAL INFORMATION:
APPLICANT: MAIC J. Rubenfield et al.
TITLE OF INVENTION: NICLEIC ACID AND AMINO ACID SEQUENCES RELATING TO PSEUDOMONAS;
TITLE OF INVENTION: AERUGINOSA FOR DIAGNOSTICS AND THERAPEUTICS.
CURRENT APPLICATION WHBER: US 60/094,291A
CURRENT PILING DATE: 1999-02-18
PRIOR APPLICATION WHBER: US 60/094,190
PRIOR FILING DATE: 1998-07-27
NUMBER OF SEQ ID NOS: 33142

LENGTH: 723
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            DB 4; Length 723;
17;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Length 522;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Indels
COMPUTER: Floppy disk
COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
SOFTWARE: Patentin Release #1.0, Version #1.30
CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/09/072,596
FILING DATE: 05-MAY-1998
CLASSIFICATION:
ATTORNEY/ACTION:
                                                                                                                                                                                                                         ATTORNEY AGENT INFORMATION:
NAME: Maki, David J
REGISTRATION NUMBER: 31,392
REFERENCE/DOCKET NUMBER: 210121.417C9
TELECOMMUNICATION INFORMATION:
TELEPHONE: (206) 622-4900
TELEPHONE: (206) 622-4900
TELEPHONE: (206) 622-6031
INFORMATION FOR SEQ ID NO: 263:
SEQUENCE CHARACTERISTICS:
LENGTH: 522 base pairs
TYPE: nucleic acid
STRANDEDNESS: Single
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            100.08; Pred. ...
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            100.0%; Prea. ...
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                1.3%; Score 19;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Search completed: August 14, 2003, 07:06:19 Job time : 117 secs
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    1082 CGACGCCAAGCTGGTGCTG 1100
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               429 CGACGCAAGCTGGTGCTG 447
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  821 CCAGTTCGACAAGCTGCTG 839
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ORGANISM: Pseudomonas aeruginosa
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Best Local Similarity 100.08
Matches 19; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Best Local Similarity 100.
Matches 19; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               TOPOLOGY: linear
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 MOLECULE TYPE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   US-09-252-991A-13195
```

```
GenCore version 5.1.6
Copyright (c) 1993 - 2003 Compugen Ltd.
```

OM protein – nucleic search, using frame\_plus\_p2n model

; Search time 91 Seconds August 14, 2003, 09:25:27 Run on:

(without alignments)
2172.963 Million cell updates/sec

US-09-701-229-2 itle: rfect score:

448 1 MSLIASDHFRIVVGLGKSGM.....MFKNFEERGRLFAKAVEELA 448 ednence:

OFIGO Scoring table:

Xgapop 60.0 , Xgapext 60.0 Ygapop 60.0 , Ygapext 60.0 Fgapop 6.0 , Fgapext 7.0 Delop 6.0 , Delext 7.0

569978 segs, 220691566 residues Searched:

Word size:

Total number of hits satisfying chosen parameters:

Minimum DB seq length: 25 Maximum DB seq length: 200000000

Post-processing: Listing first 45 summaries

Command line parameters:
-MODEL-frame+\_p2n.model -DEV-xlp
-0-/cgn2.1/G1972\_S050/app\_query.fasta\_1.647
-0-/cgn2.1/G19FPO.spool/U709701219/runat\_09082003\_161237\_S050/app\_query.fasta\_1.647
-0-/cgn2.1/G19FPO.spool/U709701219/runat\_01p2n.rni -MINMATCH-0.1 -LOOPCL-0
-DB-Issued\_Patents\_NA -OFMT-fastap -SUFFIX-011p0.rni -MINMATCH-0.1 -LOOPCL-0
-LOOPEXT-0 -UNITS-bits -START-1 -END--1 -MATRIX-011g0 -TRANS-human40.cd1
-LIST-45 -DOCALIGN-200 -THR\_SCORE-quality -THR\_MIN-1 -ALIGN-15 -MODE-LOCAL
-OUTFMT-pto -NORM-ext -HEAPSIZES-500 -MINLEN-25 -MAXIEN-200000000
-USER-U509701229\_GCGN\_1\_1\_85\_grunat\_09082003\_161237\_5050 -NCPU-6 -ICPU-3
NO\_MMAP -LARGEQUERY -NIEC\_SCORES-0 -WAIT -DSPBLOCK-100 -LONGLOG
-LOOP -

Issued\_Patents\_NA: Database

/cgn2\_6/ptodata/1/ina/5A\_COMB.seq:\*
/cgn2\_6/ptodata/1/ina/5B\_COMB.seq:\*
/cgn2\_6/ptodata/1/ina/6A\_COMB.seq:\*
/cgn2\_6/ptodata/1/ina/6B\_COMB.seq:\*
/cgn2\_6/ptodata/1/ina/PCTUS\_COMB.seq:\*
/cgn2\_6/ptodata/1/ina/PCTUS\_COMB.seq:\*

Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

## SUMMARIES

		Ap	Ap	Ap	ΑÞ	ΑÞ	Ap	Ap	Ap	1, Appli	Appli	Ap	Ap.	
	c	7702,	7861,	7787	7928	7552,	7624,	7929,	1282,	1, 1	1, 1	6271,	5881,	
	Description	Sequence 7702,	Sequence	Sequence	Sequence	Sequence	Sequence	Sequence	Sequence 1282,	Sequence	Sequence 1, Appl	Sequence 6271,	Sequence 5881	
	ΙD	US-09-252-991A-7702	US-09-252-991A-7861	US-09-252-991A-7787	US-09-252-991A-7928	US-09-252-991A-7552	US-09-252-991A-7624	US-09-252-991A-7929	US-09-328-352-1282	US-09-557-884-1	US-09-643-990A-1	US-09-313-294A-6271	US-09-313-294A-5881	
	99	4	4	4	4	4	4	4	4	7	4	4	4	
	Query Match Length DB	1371	1401	567	564			1170		1830121	1830121	297	298	
dР	Query Match	100.0	9.66	42.0	28.3	9.92	15.0	5.1	3.8	3.1	3.1	2.0	2.0	
	Score	448	446	188	127	119	29	23	17	14	14	6	6	
	sult No.	-	7	e	4	Ŋ	9	7	80	σ	10	11	13	
	Result No.	i	O	O	ပ			U				O	O	

84

25

ò g

US-09-701-229-2 (1-448) x US-09-252-991A-7702 (1-1371)

7111888	Sequence 85, Appl. Sequence 15, Appl. Sequence 28, Appl. Sequence 27, Appl. Sequence 27, Appl. Sequence 13763, A	13662, 6979, 13865, 1, App 7006,	1310, 1156, 1246, 13671, 7033,	127
-08-936-165A-: -09-147-928-1 -09-530-836-1 -09-134-001C-1 -09-265-315-8	US-US-226-41/-86 US-08-799-173A-15 US-09-109-204-28 US-09-109-204-27 US-09-109-204-27 US-09-252-991A-13763	-09-252-991A-1 -09-252-991A-6 -09-252-991A-1 -08-799-173A-1	US-09-252-991A-1310 US-09-252-991A-1156 US-09-252-991A-1246 US-09-252-991A-7033 US-09-371-696-1	09-484 09-252 09-109 09-490 08-466 08-467
4644666	0 0 0 4 0 4 A	44404	44446	44044444
717 1242 1372 1374 2423 2423	24 20 20 20 20 20 20 20 20 20 20 20 20 20	873 963 990 1105	1164 1326 1419 1428 1557 1779	1886 22228 22224 23260 2360 2360
00000000	, 4 4 4 4 4 4 5 8 8 8 8 8 8 8	44444 888888	444444 888888	
<b>თთთთთთ</b> თ	ာ ထာ ထာ ထာ ထု ထာ ထ		<b>ထ ထ ထ ထ ထ ထ</b>	
11111111111111111111111111111111111111	0 2 2 2 2 2 2 2 2 2 2 4 2 2 2 4 3 3 2 1 2 5 4 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	C 27 28 29 C 30 31	мммммм	000 0000 00000 00000000000000000000000

## ALIGNMENTS

```
APPLICANT: Marc J. Rubenfield et al.

TITLE OF INVENTION: NUCLEIC ACID AND AMINO ACID SEQUENCES RELATING TO PSEUDOMONAS
TITLE OF INVENTION: AERUGINOSA FOR DIAGNOSTICS AND THERAPEUTICS
FILE REFERENCE: 107196.136
CURRENT APPLICATION NUMBER: US,09/252,991A
CURRENT FILING DATE: 1999-02-18
PRIOR PILING DATE: 1998-02-18
PRIOR APPLICATION NUMBER: US 60/074,788
PRIOR PILING DATE: 1998-02-18
PRIOR PILING DATE: 1998-07-27
NUMBER OF SEQ ID NOS: 33142
SEQ ID NOS: 33142
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Conservative:
Mismatches:
Indels:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Matches:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Length:
                Sequence 7702, Application US/09252991A Patent No. 6551795 GENERAL INFORMATION: APPLICANT: Marc J. Rubenfield et al.
                                                                                                                                                                                                                                                                                                                                                                                                             ORGANISM: Pseudomonas aeruginosa
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            448.00
100.00%
100.00%
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Percent Similarity:
Best Local Similarity:
Query Match:
US-09-252-991A-7702
                                                                                                                                                                                                                                                                                                                                                                                                                                     US-09-252-991A-7702
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Alignment Scores:
```

oy D	21 SerLeuvalArgTyrLeuAlaArgArgGlyLeuProPheAlaValValAspThrArgGlu 40 	Db 1165 GACGCGGGCTGATTGCCCAGGCACGCGGTACCGCTGGTGCGCGCGC
oy g	41 AsnProFroGluLeuAlaThrLeuArgAlaGlnTyrProGlnValGluValArgCysGly 60 	Oy 401 LeuAspGluAlaValArgGlnAlaAlaGluLeuAlaArgGluGlyAspAlaValLeuLeu 420
oy ea	SSETALAATGGLULEUTyrValSerProGlyLeuSer 	Oy 421 SerProAlaCysAlaSerLeuAspMetPheLysAsnPheGluGluArgGlyArgLeuPhe 440
& £	lyAspile	Qy         441 AlaLysalaValGluLeuala 448
S S Q	1 AspleuPheAlaArgGluAlaLysAlaProlleValAlaIleThrGly.	RESULT 2 US-09-252-991A-7861/c ; Sequence 7861, Application US/09252991A ; Patent No. 6551795
ç d	121 SerThrValThrThrLeuValGlyGluMetalaValAlaAlaAspLysArgValAlaVal 140 	; GENERAL INFORMATION: ; APPLICANT: MARC J. Rubenfield et al. ; TITLE OF INVENTION: NUCLBIC ACID AND AMINO ACID SEQUENCES RELATING TO PSEUDOMONAS ; TITLE OF INVENTION: AERGGINOSA FOR DIAGNOSTICS AND THERAPEUTICS
Qy Dp	141 GlyGlyAsnLeuGlyThrProAlaLeuAspLeuLeuAlaAspAspIleGluLeuTyrVal 160 	; FILE REFERENCE: 107196.136 ; CURRENT APPLICATION WUMBER: 105/09/252,991A ; CURRENT FILING DATE: 1999-02-18 ; PRIOR APPLICATION NUMBER: US 60/074,788
e e	161 LeuGluLeuSerSerPheGlnLeuGluThrCysAspArgLeuAsnAlaGluValAlaThr 180 	; PRIOR FILING DATE: 1998-02-18 ; PRIOR APPLICATION NUMBER: US 60/094,190 ; PRIOR FILING DATE: 1998-07-27 ; NUMBER OF SEQ ID NOS: 33142
දු පු	181 ValLeuasnValSerGluaspHisMetaspArgTyraspGlyMetalaaspTyrHisLeu 200 	٠,
& g	201 AlaLysHisargIlePheArgGlyAlaArgGlnValValValAsnArgAlaAspAlaLeu 220 	Length:
Oy GD	221 ThrargProLeuIleAlaAspThrValProCysTrpSerPheGlyLeuAsnLysProAsp:240 	Score: 446 00 Matches: 446 Percent Similarity: 100.00% Conservative: 0 Best Local Similarity: 100.00% Mismatches: 0 Query Match: 99.55% Indels: 0
ý a	241 PheLysalaPheGlyLeuIleGluGluAspGlyGlnLysTrpLeuAlaPheGlnPheAsp 260 	4 Gaps: 9-2 (1-448) x US-09-252-991A-7861 (1-1401)
oy Oy	uleuLysIleArgGlyAlaHisAsnTyrSerAsnAlaLeu 	Oy 1 MetSerLeulleAlaSerAspHisPheArgIleValValGlyLeuGlyLysSerGlyMet 20 
oy Op	AlaalaLeudlaLeuGlyHisAlaValGlyLeuProPheAspAlaMetLeuGlyAlaLeu	Oy 21 SerLeuValArgTyrLeuAlaArgArgGlyLeuProPheAlaValValAspThrArgGlu 40 
	rpvalargGluargGlnGlyvalSer 	Oy 41 AsnProProGluLeuAlaThrLeuArgAlaGlnTyrProGlnValGluValArgCysGly 60 
oy Op	alGlyAlaAlaLeuAlaAlaIleGluGlyLeu 	Oy 61 GluLeuAspAlaGluPheLeuCysSerAlaArgGluLeuTyrValSerProGlyLeuSer 80 
Oy Dp	YLYSGlyAlaAsp 	Oy 81 LeuArgThrProAlaLeuValGlnAlaAlaAlaAlySGlyValArgIleSerGlyAspIle 100 
Qy	PheHisaspLeuArgGluProValAlaArgPheCysArgAlaValValLeuLeuGlyArg	Oy 101 AspLeuPheAlaArgGluAlaLysAlaProIleValAlaIleThrGlySerAsnAlaLys 120
, ,	81 AspalaGlyLeuIleAlaGlnAlaLeuGlyAsnAlaValProLeuValArgValAlaThr	Oy 121 SerThrValThrThrLeuValGlyGluMetAlaValAaAsaAgaAspLysArgValAlaVal 140

```
Percent Similarity:
Best Local Similarity:
 TITLE OF INVENTION:
                                                                                                                                                                                                                                                                                                                                                                                      US-09-252-991A-7928/c
                                                                                     Alignment Scores:
                                                                                                                                  US-09-701-229-2
                                                                                                                                                                    262
                                                                                                                                                                                           282
                                                                                                                                                                                                     445
                                                                                                                                                                                                                  302
                                                                                                                                                                                                                            385
                                                                                                                                                                                                                                                              342
                                                                                                                                                                                                                                                                          265
                                                                                                                                                                                                                                                                                                202
                                                                                                                                                                                                                                                                                                                                                         422
                                                                                                                                                                               505
                                                                                                                                                                                                                                                                                                                                                                    25
                                                               TYPE: DNA
                                                                                                                  Query Match:
                                                                                           ..
0
                                                          LENGTH
                                                                                                                                                                                                                                                  g
                                                                                                                                                                                                                                                                         셤
                                                                                                                                                                                                                                                                                               g
                                                                                                                                             à
                                                                                                                                                        셤
                                                                                                                                                                    ò
                                                                                                                                                                              g
                                                                                                                                                                                           ò
                                                                                                                                                                                                    g
                                                                                                                                                                                                                 ò
                                                                                                                                                                                                                            8
                                                                                                                                                                                                                                        ò
                                                                                                                                                                                                                                                              οχ
                                                                                                                                                                                                                                                                                     δ
                                                                                                                                                                                                                                                                                                            οy
                                                                                                                                                                                                                                                                                                                       셤
                                                                                                                                                                                                                                                                                                                                  δ
                                                                                                                                                                                                                                                                                                                                             g
                                                                                                                                                                                                                                                                                                                                                         δ
                                                                                                                                                                                                                                                                                                                                                                    셤
                                                                                                     240
                                                                                                                                                                                                           379
                                                                                                                                                                                                                      340
                                                                                                                                                                                                                                                                    380
                                                                                                                                                                                                                                                                                           400
                                                                                                                                                                                                                                                                                                                 180
                                             799
                                                        200
                                                              220
                                                                                          619
                                                                                                                 619
                                                                                                                            260
                                                                                                                                                   280
                                                                                                                                                         300
                                                                                                                                                                                                                                  319
                                                                                                                                                                                                                                                         259
                                                                                                                                                                                                                                                                               199
                      859
                                                                                                                                                                                                                                             GlyAlaAspIleAspGlyLysLeuValLeuLeuAlaGlyGlyAspGlyLysGlyAlaAsp 360
                                                                                                    AGCACCGTGACCACCCTGGTGGGCGAAATGGCGGTGGCCGCGGGACAAGCGTGTCGCCGTC
                                 AlaLysHisArgIlePheArgGlyAlaArgGlnValValValAsnArgAlaAspAlaLeu
                                                                                                                           LysLeuLeuProValGlyGluLeuLysIleArgGlyAlaHisAsnTyrSerAsnAlaLeu
                                                                                                                                                                         GCCGCGCTGGCGCTGGGCCATGCGGTCGGCCTTGCCGTTCGACGCCATGCTCGGCGCGCGTG
                                                                                                                                                                                                     PheHisAspLeuArgGluProValAlaArgPheCysArgAlaValValLeuLeuGlyArg
                                                                                                                                                                                                                                                                         TyrTyrAspAspSerLysAlaThrAsnValGlyAlaAlaLeuAlaAlaIleGluGlyLeu
                                                                                                                                                                                                                                                   ValLeuAsnValSerGluAspHisMetAspArgTyrAspGlyMetAlaAspTyrHisLeu
                                                                                                                                                                                                LysAlaPheSerGlyLeuAlaHisArgCysGlnTrpValArgGluArgGlnGlyValSer
                                                                                                                                                                                                                                                                                                                                                               AlaLysAlaValGluGlu 446
                                                                                                                                                                                                                                                                                                                                                                    US-09-252-991A-7787/c
                      918
                                             828
                                                                              201
                                                                                                                            241
                                                                                                                                       618
                                                                                                                                                             558
                                                                                                                                                                                    498
                                                                                                                                                                                                           438
                                                                                                                                                                                                                                 378
                                                                                                                                                                                                                                             341
                                                                                                                                                                                                                                                        318
                                                                                                                                                                                                                                                                    361
                                                                                                                                                                                                                                                                               258
                                                                                                                                                                                                                                                                                          381
                                                                                                                                                                                                                                                                                                      198
                                                                                                                                                                                                                                                                                                                           138
                                                                                                                                                                                                                                                                                                                                                                         18
978
                                                                   798
                                                                                                     221
                                                                                                                678
                                                                                                                                                   261
                                                                                                                                                                          281
                                                                                                                                                                                                                      321
                                                                                                                                                                                                                                                                                                                 401
                                                                                                                                                                                                                                                                                                                                        421
                                                                                                                                                                                                                                                                                                                                                  78
                                                                                                                                                                                                                                                                                                                                                               441
                                 161
                                                        181
                                                                                          738
                                                                                                                                                                                               301
                                                                                                                                                                                                                                                                                                                                                                                      RESULT
                                                                                         g
                                                                                                                                                            g
                                                                                                                                                                                                         g
                                                                                                                                                                                                                                Д
                                                                                                                                                                                                                                                                                                                                                                         g
g
           ö
                      셤
                                 ò
                                            g
                                                        ð
                                                                               à
                                                                                                     à
                                                                                                               셤
                                                                                                                           ò
                                                                                                                                      엄
                                                                                                                                                   ŏ
                                                                                                                                                                        à
                                                                                                                                                                                    g
                                                                                                                                                                                               à
                                                                                                                                                                                                                     δ
                                                                                                                                                                                                                                            ò
                                                                                                                                                                                                                                                       g
                                                                                                                                                                                                                                                                   à
                                                                                                                                                                                                                                                                              g
                                                                                                                                                                                                                                                                                          Ω
                                                                                                                                                                                                                                                                                                    g
                                                                                                                                                                                                                                                                                                                 ò
                                                                                                                                                                                                                                                                                                                          q
                                                                                                                                                                                                                                                                                                                                      ò
                                                                                                                                                                                                                                                                                                                                                  g
                                                                                                                                                                                                                                                                                                                                                               ò
```

Rubenfield et al. NUCLEIC ACID AND AMINO ACID SEQUENCES RELATING TO PSEUDOMONAS

Sequence 7787, Application US/09252991A Patent No. 6551795 GENERAL INFORMATION:
TITLE OF INVENTION: NUCLEIC ACID AND A

```
Rubenfield et al.
NUCLEIC ACID AND AMINO ACID SEQUENCES RELATING TO PSEUDOMONAS
AERUGINOSA FOR DIAGNOSTICS AND THERAPEUTICS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         321
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           266
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           146
                                                                                                                                                                                                                                                                                                                                                                                506
                                                                                                                                                                                                                                                                                                                                                                                                                                        446
                                                                                                                                                                                                                                                                                                                                                                                                                                                                    301
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             386
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     326
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  341
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         361
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   206
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               381
                                                                                                                                                                                                                                                                                                                                                      261
                                                                                                                                                                                                                                                                                                                                                                                                           281
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     401
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            421
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                98
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       AlaLeuAlaLeuGlyHisAlaValGlyLeuProPheAspAlaMetLeuGlyAlaLeuLys
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          AlaPheSerGlyLeuAlaHisArgCysGlnTrpValArgGluArgGlnGlyValSerTyr
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        GCGTTTTCCGGCCTGGCTCATCGCTGCCAGTGGGTACGCGAGCGGCAGGGCGTGAGCTAC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                362 HisaspLeuargGluProValalaarqPheCysArgAlaValValLeuLeuGlyArgAsp
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               402 AspGluAlaValArgGlnAlaAlaGluLeuAlaArgGluGlyAspAlaValLeuLeuSer
AND THERAPEUTICS
                                                                                                                                                                                                                                                     Conservative:
Mismatches:
Indels:
                                                                                                                                                                                                                                                                                                                           (1-448) x US-09-252-991A-7787 (1-567)
NN: AERUGINOSA FOR DIAGNOSTICS 107196.136
           FILE REFERENCE: 107196.136
CURRENT APPLICATION NUMBER: US/09/252,991A
CURRENT FILING DATE: 1999-02-18
FRIOR APPLICATION NUMBER: US 60/074,788
PRIOR FILING DATE: 1998-02-18
PRIOR FILING DATE: 1998-07-27
PRIOR FILING DATE: 1998-07-27
SEQ ID NO 7787
                                                                                                                                                                                                                            Length:
Matches:
                                                                                                                                                                                                                                                                                                Gaps:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     429
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Sequence 7928, Application US/09252991A Patent No. 6551795
GENERAL INFORMATION:
APPLICANT: MARC J. Rubenfield et al.
TITLE OF INVENTION: NUCLEIC ACID AND ATTLE OF INVENTION: AERUGINOSA FOR DIM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ~
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ProAlaCysAlaSerLeuAspMet
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  CCGGCCTGCGCGAGCCTGGACATG
                                                                                                                                                                    ; ORGANISM: Pseudomonas aeruginosa
US-09-252-991A-7787
                                                                                                                                                                                                                         1.73e-175
188.00
100.00%
100.00%
41.96%
```

Length: Matches: Conservative: Mismatches: Indels:

Gaps:

```
US-09-701-229-2 (1-448) x US-09-252-991A-7552 (1-360)
                                                           5.84e-108
119.00
100.00%
100.00%
26.56%
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Percent Similarity:
Best Local Similarity:
Query Match:
                                                                                                           Percent Similarity:
Best Local Similarity:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 US-09-252-991A-7624
                                     Alignment Scores:
Pred. No.:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Alignment Scores:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           LENGTH: 1359
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         TYPE: DNA
                                                                                                                                                          Query Match:
DB:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Pred. No.:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         RESULT 6
                                                                                                                                                                                                                                                                               ò
                                                                                                                                                                                                                                                                                                                                                                         ò
                                                                                                                                                                                                                                                                                                                                                                                                                   g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ద
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ä
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ô
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ŏ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             GENERAL INFORMATION:
APPLICANT: MAIC J. Rubenfield et al.
TITLE OF INVENTION: ABENGINOSA FOR DIAGNOSTICS AND THERAPEUTICS
TITLE OF INVENTION: NUMBER: US/09/252,991A
CURRENT APPLICATION NUMBER: US 60/074,788
PRIOR FILING DATE: 1998-02-18
PRIOR FILING DATE: 1998-07-27
NUMBER OF SEQ ID NOS: 33142
SEQ ID NO 7552
LENGTH: 360
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     361
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         AspGluAlaValArgGlnAlaAlaGluLeuAlaArgGluGlyAspAlaValLeuLeuSer 421
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      264
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          TyrAspAspSerLysAlaThrAsnValGlyAlaAlaLeuAlaAlaIleGluGlyLeuGly
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       564
127
0
0
0
                                                                                                                                                                                                                                                                                                                                                                    Length:
Matches:
Conservative:
Mismatches:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 US-09-701-229-2 (1-448) x US-09-252-991A:7928 (1-564)
| FILE REFERENCE: 107196.13b | CURRENT APPLICATION UNMER: US/09/252,991A | CURRENT FILING DATE: 1999-02-18 | PRIOR APPLICATION NUMBER: US 6//074,788 | PRIOR FILING DATE: 1998-02-18 | PRIOR FILING DATE: 1998-07-27 | NUMBER OF SEQ ID NOS: 33142 | SEQ ID NO 7928 | LENGTH : S64 | CONTACT |
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ; Sequence 7552, Application US/09252991A . Patent No. 6551795
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ; TYPE: DNA
; ORGANISM: Pseudomonas aeruginosa
US-09-252-991A-7928
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ; TYPE: DNA
; ORGANISM: Pseudomonas aeruginosa
US-09-252-991a-7552
                                                                                                                                                                                                                                                                                                                                              1.26e-115
127.00
100.00%
100.00%
28.35%
                                                                                                                                                                                                                                                                                                                                                                                                            Percent Similarity:
Best Local Similarity:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               US-09-252-991A-7552
                                                                                                                                                                                                                                                                                                                                              Alignment Scores:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        382
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    383
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 402
                                                                                                                                                                                                                                                                                                                                                                                                                                                      Query Match:
DB:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    RESULT
                                                                                                                                                                                                                                                                                                                                                                                             Score:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              à
```

```
Sequence 7624, Application US/09252991A

SERVERAL INFORMATION:

APPLICANT: Marc J. Rubenfield et al.

TITLE OF INVENTION: ARENGINOSA FOR DIAGNOSTICS AND THERAPEUTICS

TITLE OF INVENTION: ARENGINOSA FOR DIAGNOSTICS AND THERAPEUTICS

CURRENT APPLICATION NUMBER: US/09/252,991A

CURRENT FILING DATE: 1999-02-18

PRIOR FILING DATE: 1998-02-18

PRIOR APPLICATION NUMBER: US 60/094,190

PRIOR PILING DATE: 1998-07-27

NUMBER OF SEQ ID NOS: 33142
                                                                 243 GCGCTGGTACAGGCCGCCGCGCAAAGGTGTGCCCATCTCCCGGTGACATCGTTCGCC 302
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           61
                                                                                                                                                                                                                                                                            85 AlaLeuValGlnAlaAlaAlaLysGlyValArgIleSerGlyAspIleAspLeuPheAla 104
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    421
   7
                                  62
                                                                                                                                                                                                                                                                                                                                                105 ArgGluAlaLysAlaProIleValAlaIleThrGlySerAsnAlaLysSerThrVal 123
                                                                                                                                                                                                                                                                                                                                                                   303 CGCGAGGCGAAGGCCCCGATCGTCGCCATCACCGGTTCCAACGCGAAGGCACCGTG 359
402 AspGlualaValArgGlnAlaAlaGluLeuAlaArgGluGlyAspAlaValLeuLeuSer
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    1359
67
0
0
0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             US-09-701-229-2 (1-448) x US-09-252-991A-7624 (1-1359)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Length:
Matches:
Conservative:
Mismatches:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Indels:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Gaps:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ORGANISM: Pseudomonas aeruginosa
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  2.22e-56
67.00
100.00%
100.00%
```

```
the Haemophilus influenzae Rd Genome, Fragments
                                                                                                                                         110 ProlleValAlalleThrGlySerAsnAlaLysSerThrValThrThrLeu 126
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           1203588 GAACTTTATGTACTAGAGCTTTCTAGTTTTCAGCTTGAGACA 1203629
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      157 GluLeuTyrValLeuGluLeuSerSerPheGlnLeuGluThr 170
                 00
                                                                                                                                                                                                                                                                                                                              Nucleotide sequence of
                                                                                                                                                                                                                                                                                                                                                                         Thereof, and Uses Thereof
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Conservative:
Mismatches:
Indels:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             US-09-701-229-2 (1-448) x US-09-557-884-1 (1-1830121)
                                                                             US-09-701-229-2 (1-448) x US-09-328-352-1282 (1-1416)
                                                                                                                                                                                                                                                                                                                                                                                                                                 ADDRESSEE: Human Genome Sciences, Inc. STREET: 9410 Key West Avenue CITY: Rockville
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       COMPUTER READABLE FORM:

MEDIUM TYPE: 3 1/2 inch diskette
COMPUTER: Dell Pentium
OPERATING SYSTEM: NS DOS v6.22
SOFTWARE: ASCII Text
CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/09/557,884
FILING DATE: 25-Apr-2000
CLASSIFICATION: «Unknown»
PRIOR APPLICATION: «Unknown»
PRIOR APPLICATION NUMBER: 08/476,102
FILLING DATE: JUN-5-1995
ATTORNEY/AGENT INFORMATION:
NAME: MICHEL MICHELLES: MAKS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Matches:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       REFERENCE/DOCKET NUMBER: PB186P3 TELECOMMUNICATION INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           SEQUENCE DESCRIPTION: SEQ ID NO: 1: US-09-557-884-1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    REGISTRATION NUMBER: 41,971
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                LENGTH: 1830121 base pairs
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         US-09-643-990A-1; Sequence 1, Application US/09643990A; Patent No. 6538289; GENERAL INFORMATION:
                                                                                                                                                                                                                                          Sequence 1, Application US/09557884
Patent No. 6506581
GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                    APPLICANT: Fleischmann et an TITLE OF INVENTION: The Nucl
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                TELEPHONE: 301-309-8504
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 TELEFAX: 301-309-8439 INFORMATION FOR SEQ ID NO: 1:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     TYPE: nucleic acid
STRANDEDNESS: double
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          SEQUENCE CHARACTERISTICS
                                                                                                                                                                                                                                                                                                                                                                                                                  CORRESPONDENCE ADDRESS
3.79%
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              TOPOLOGY: linear
                                                                                                                                                                                                                                                                                                                                                                                             NUMBER OF SEQUENCES:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     USA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ZIP: 20850
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  STATE: MD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Best Local Similarity:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     COUNTRY:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Percent Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Alignment Scores:
                                                                                                                                                                                                                         US-09-557-884-1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Query Match:
                 Query Match:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Pred. No.:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               g
                                                                                                                      δŏ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ŏ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 GENERAL INFORMATION:
APPLICANT: Gary L. Breton et al.
TITLE OF INVENTION: NUCLEIC ACID AND AMINO ACID SEQUENCES RELATING TO ACINETOBACTER
TITLE OF INVENTION: BAUMANII FOR DIAGNOSTICS AND THERAPEUTICS
FILE REFERENCE: GTC99-03PA
                                                                                                                                                                                                                                                                                                                        APPLICANT: MATC J. Rubenfield et al.,
APPLICANT: MATC J. Rubenfield et al.,
TITLE OF INVENTION: NUCLEIC ACID AND AMINO ACID SEQUENCES RELATING TO PSEUDOMONAS
TITLE OF INVENTION: AERUGINOSA FOR DIAGNOSTICS AND THERAPEUTICS
FILE REPERENCE: 107196.136
CURRENT APPLICATION NUMBER: US/09/252,991A
CURRENT FILING DATE: 1999-02-18
PRIOR FILING DATE: 1998-02-18
PRIOR FILING DATE: 1998-02-18
PRIOR FILING DATE: 1998-02-18
NUMBER OF SEQ ID NOS: 33142
LENGTH: 1170

        ProAlaCysAlaSerLeuAspWetPheLysAsnPheGluGluArgGlyArgLeuPheAla 441

               62 GACGAAGCAGTCCGGCAGGCCGCCGAGCTGGCCCGCGAAGGCGATGCGGTGCTGTTGTCG 121
                                                                                            122 ccgccrccccaccrccarcrcaagaacrrcaagaacrccaagaaccccccrcrrccc 181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          1 MetSerLeulleAlaSerAspHisPheArgIleValValGlyLeuGlyLySSerGlyMet 20
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  11170
233
0
0
0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    3-09-701-229-2 (1-448) x US-09-252-991A-7929 (1-1170)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Length:
Matches:
Conservative:
Mismatches:
Indels:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Length:
Matches:
Conservative:
Mismatches:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          CURRENT APPLICATION NUMBER: US/09/328,352
CURRENT FILING DATE: 1999-06-04
SEQ ID NO 1282
                                                                                                                                                                                                                                                              Sequence 7929, Application US/09252991A Patent No. 6551795
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Sequence 1282, Application US/09328352 Patent No. 6562958
                                                                                                                                       442 LysAlaValGluGluLeuAla 448
                                                                                                                                                          182 AAAGCCGTAGAGGAGCTAGCG 202
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ; ORGANISM: Acinetobacter baumannii
US-09-328-352-1282
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                TYPE: DNA ORGANISM: Pseudomonas aeruginosa
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          100.00%
100.00%
5.13%
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          92e-13
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       2.7e-07
17.00
100.00%
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           3.00
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          .21 SerLeuVal 23
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    11 TCCCTGGTG 3
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Best Local Similarity:
Query Match:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Best Local Similarity:
                                                                                                                                                                                                                                                                                                         GENERAL INFORMATION:
                                                                                                                                                                                                                                              S-09-252-991A-7929/c
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         US-09-252-991A-7929
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Percent Similarity:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Percent Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               US-09-328-352-1282
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Alignment Scores:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Alignment Scores:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                LENGTH: 1416
                                                       122
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        TYPE: DNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Pred. No.:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Pred. No.:
                                                                                                                                                                                                                       RESULT 7
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            RESULT 8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Score:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ŏ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               g
```

```
APPLICANT: Lalgudi, Raghunath V.
APPLICANT: Lalgudi, Raghunath V.
APPLICANT: Ito, Laura Y.
APPLICANT: Ito, Laura Y.
APPLICANT: Sherman, Bradlag K.
TITLE OF INVENTION: POLYNCLEOTIDES AND POLYPEPTIDES DERIVED FROM CORN EAR FILE REFERENCE: PL-0017 US
CURRENT APPLICATION NUMBER: US/09/313,294A
CURRENT FILING DATE: 1999-05-14
NUMBER OF SEO ID NOS: 7600
SOFTWARE: PERL PROGRAM
                                                                                                                                                                                                                                                                          297
0
0
0
0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             298
9
0
                                                                                                                                           OTHER INFORMATION: Incyte ID No. 6476212 700351520H1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    NAME/KEY: misc_feature
OTHER INFORMATION: Incyte ID No. 6476212 700350840H1
NAME/KEY: unsure
                                                                                                                                                                                                                                                                          Length:
Matches:
Conservative:
Mismatches:
Indels:
                                                                                                                                                                                                                                                                                                                                                                                                               US-09-701-229-2 (1-448) x US-09-313-294A-6271 (1-297)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Conservative:
Mismatches:
Indels:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  US-09-701-229-2 (1-448) x US-09-313-294A-5881 (1-298)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Length:
Matches:
                                                                                                                                                                                                                                                                                                                                                                                                                                                      348 LeuValLeuLeuAlaGlyGlyAspGly 356
                                                                                                                                                                                                                                                                                                                                                                                                                                                                          261 CTCGTCCTCGCCGGTGGTGACGC 235
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       348 LeuValLeuLeuAlaGlyGlyAspGly 356
                                                                                                                                                                                                                                                                                                                                                                           Gaps:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               NAME/KEY: unsure
LOCATION: 133-178
OTHER INFORMATION: a, t, c, g, or other
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        LOCATION: 58, 109-154, 263
OTHER INFORMATION: a, t, c, g, or other
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                US-09-313-294A-5881/c
; Sequence 5881, Application US/09313294A
; Patent No. 6476212
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 US-08-936-165A-78
; Sequence 78, Application US/08936165A
; Patent No. 6348582
                                                                                                                                                                                                                                                                                                                100.00%
100.00%
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 100.00%
100.00%
2.01%
                                                                                                                                                                                                                                                                                                                                                       .018
          PERL Program
                                                                                                                       NAME/KEY: misc_feature
                                                                                                                                                                                                                                                                                                            Percent Similarity:
Best Local Similarity:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Percent Similarity:
Best Local Similarity:
Query Match:
                                                                                    ORGANISM: Zea mays
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ORGANISM: Zea mays
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             GENERAL INFORMATION:
                                                                                                                                                                                                                     US-09-313-294A-6271
                                                                                                                                                                                                                                                        Alignment Scores:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Alignment Scores:
                        SEQ ID NO 6271
LENGTH: 297
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     SEQ ID NO 5881
                                                                TYPE: DNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               TYPE: DNA
                                                                                                                                                                                                                                                                                                                                                         Query Match:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   FEATURE:
                                                                                                    FEATURE
                                                                                                                                                                                                                                                                                ..
9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Score:
                                                                                                                                                                                                                                                                                                                                                                                                                                                      ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     APPLICANT: Lalgudi, Raghunath V.
APPLICANT: Lalgudi, Raghunath V.
APPLICANT: Ito, Laura Y.
APPLICANT: Sherman, Bradley K.
TITLE OF INVENTION: POLYNUCLEOTIDES AND POLYPEPTIDES DERIVED FROM CORN EAR FILE REFERENCE: PL-0017 US CURRENT APPLICATION UNMBER: US/09/313,294A
CURRENT FILING DATE: 1999-05-14
WUMBER OF SEQ ID NOS: 7600
                                                              J. Craig Venter
J. Craig Venter
TITLE OF INVENTION: The Nucleotide sequence of
the Haemophilus influenzae Rd Genome, Fragments
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         1830121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   US-09-701-229-2 (1-448) x US-09-643-990A-1 (1-1830121)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Length:
Matches:
Conservative:
Mismatches:
Indels:
                                                                                                                                                     NUMBER OF SEQUENCES: 1
CORRESPONDENCE ADDRESS:
ADDRESSE: Human Genome Sciences, Inc.
STREET: 9410 Key West Avenue
CITY: Rockville,
                                                                                                                                                                                                                                                                                                                                                                                                                         APPLICATION NUMBER: US/09/643,990A FILING DATE: 23-Aug-2000 CLASSIFICATION: <ur>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         REFERENCE/DOCKET NUMBER: PB186F1C1
TELECOMMUNICATION INFORMATION:
TELEPHONE: 301-610-5790
TELEFAX: 310-309-8439
                                                                                                                                                                                                                                                                                                      COMPUTER READABLE FORM:
MEDIUM TYPE: 3 1/2 inch diskette
COMPUTER: Dell Pentlum
OPERATING SYSTEM: MS DOS V6.22
SOFTWARE: ASCII Text
CURRENT APPLICATION DATA:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  PRIOR APPLICATION DATA:
APPLICATION NUMBER: 08/487,429
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        FILING DATE: 1995-06-07
APPLICATION WONBER: 08/426,787
FILING DATE: 1995-04-21
ATTORNEY/AGENT INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Gaps:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       SEQUENCE DESCRIPTION: SEQ ID NO: 1:
Robert D. Fleischmann
Mark D. Adams
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     NAME: Kenley K. Hoover
REGISTRATION NUMBER: 40,302
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Sequence 6271, Application US/09313294A Patent No. 6476212 GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      LENGTH: 1830121 base pairs
TYPE: nucleic acid
STRANDEDNESS: double
                                                          Hamilton O. Smith
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          SEQUENCE CHARACTERISTICS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      100.00%
100.00%
3.12%
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      INFORMATION FOR SEQ ID NO:
                          Mark D. Ada
Owen White
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       OPOLOGY: linear
                                                                                                                                                                                                                                                                        COUNTRY: USA
                                                                                                                                                                                                                                                                                          ZIP: 20850
                                                                                                                                                                                                                                                    STATE: MD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Percent Similarity:
Best Local Similarity:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            US-09-313-294A-6271/c
APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Alignment Scores:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       US-09-643-990A-1
```

Query Match:

RESULT 11

GENERAL INFORMATION: APPLICANT: Black, Michael

```
Sequence 1, Application US/09530836

Patent No. 6534284

GENERAL INFORMATION:
APPLICANT: Montaumed El-Sherbeini
APPLICANT: Mayne M. Geissler
TITLE OF INVENTION: AURED PROTEIN AND GENE OF STAPHYLOCOCCUS
TITLE OF INVENTION: AUREDS:
TITLE OF INVENTION: AUREDS:
TITLE OF INVENTION: AUREDS:
TITLE OF INVENTION: AUREDS:
CURRENT APPLICATION NUMBER: US/09/530,836
CURRENT FILING DATE: 2000-05-03
PRIOR FILING DATE: 19987-11-04
PRIOR FILING DATE: 1998-10-30
PRIOR FILING DATE: 1998-10-30
NUMBER OF SEQ ID NOS: 6
SOUTWARE: FastSEQ for Windows Version 4.0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Conservative:
Mismatches:
Indels:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Conservative:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      US-09-701-229-2 (1-448) x US-09-147-928-1 (1-1242)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  US-09-701-229-2 (1-448) x US-09-530-836-1 (1-1372)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Mismatches:
Indels:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Length:
Matches:
                  APPLICANT: Deresiewicz, Robert L.
TITLE OF INVENTION: MarD
FILE REFERENCE: GM10106
CURRENT APPLICATION NUMBER: US/09/147,928
CURRENT FILING DATE: 1999-03-19
EARLIER PILING DATE: 1997-10-03
NUMBER OF SEQ ID NOS: 6
SOFTWARE: FastSEQ for Windows Version 3.0
SEQ ID NO 1
LENGTH: 1242
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Matches:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                418 ValLeuLeuSerProAlaCysAlaSer 426
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            TYPE: DNA
CRGANISM: Staphlococcus aureus murD
US-09-530-836-1
                                                                                                                                                                                                                                                                                                                                                                                                                            - A, T, C or G
                                                                                                                                                                                                                                                                   TYPE: DNA ORGANISM: Staphylococcus aureus
APPLICANT: Nicholas, Richard O.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         100.00%
100.00%
2.01%
                                                                                                                                                                                                                                                                                                           FEATURE:

NAME/KEY: CDS

LOCATION: (1)...(1239)

NAME/KEY: misc_feature

LOCATION: (1)...(1242)

OTHER INFORMATION: n = A
US-09-147-928-1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Percent Similarity:
Best Local Similarity:
Query Match:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Percent Similarity:
Best Local Similarity:
Query Match:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Alignment Scores:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Alignment Scores:
Pred. No.:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              SEQ ID NO 1
LENGTH: 1372
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      RESULT 15
US-09-530-836-1
                                                         APPLICANT: Lonetto, Michael
APPLICANT: Michael
APPLICANT: Pract, Julie
APPLICANT: Pract, Julie
APPLICANT: Pract, Julie
APPLICANT: Reichard, Richard
APPLICANT: Rosenberg, Martin
APPLICANT: Ward, Judith
TITLE OF INVENTION: No. 6348582el Prokaryotic Polynucleotides,
TITLE OF INVENTION: Polypeptides and Their Uses
CORRESPONDENCE: 534
CORRESPONDENCE ADDRESS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Length:
Matches:
Conservative:
Mismatches:
                                                                                                                                                                                                                                                                                                                                                                  COUNTRY: USA
ZIP: 19406-0939
COMPUTER READBLE FORM:
MEDIUM TYPE: Diskette
COMPUTER: IBM Compatible
OPERATING SYSTEM: DOS
SOFWARE: FastSEQ for Windows Version 2.0
CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/08/936,165A
FILING DATE: 24-SEP-1997
CLASSIFICATION: 536
PRIOR APPLICATION DATA:
APPLICATION NUMBER: 60/027,032
FILING DATE: 24-SEP-1996
ATTORNEY,AGENT INFORMATION:
NAME: Gimmi, Edward R
REGISTRATION NUMBER: 38,891
REGISTRATION NUMBER: 38,891
REGISTRATION NUMBER: 38,891
REGISTRATION NUMBER: 38,891
REFERENCE/DOCKET NUMBER: P50549
TELECHMUNICATION INFORMATION:
TELEDHONE: 610-270-4478
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  US-09-701-229-2 (1-448) x US-08-936-165A-78 (1-717)
                                                                                                                                                                                                                                                                                 ADDRESSEE: SmithKline Beecham Corporation
STREET: 709 Swedeland Road
CITY: King of Prussia
STATE: PA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 418 ValLeuLeuSerProAlaCysAlaSer 426
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        411 GTATTATIGTCACCTGCTTGTGCGAGT 437
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Sequence 1, Application US/09147928
Patent No. 6211161
GENERAL INFORMATION:
                                         Knowles, David
Lonetto, Michael
Nicholas, Richard
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             INFORMATION FOR SEQ ID NO: 78:
SEQUENCE CHARACTERISTICS:
LENGTH: 717 base pairs
TYPE: nucleic acid
STRANDEDNESS: single
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ; MOLECULE TYPE: Genomic DNA US-08-936-165A-78
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      100.00%
100.00%
2.01%
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           APPLICANT: Hodgson, John E. APPLICANT: Beattie, David T. APPLICANT: Lowe, Adrian M. APPLICANT: Lonetto, Michael
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 APPLICANT: Palmer, Leslie M. APPLICANT: Pratt, Julie M.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        TELEFAX: 610-270-5090
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    linear
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Percent Similarity:
Best Local Similarity:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Alignment Scores:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         US-09-147-928-1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Pred. No.:
```

ð

1258 GTATTATTGTCACCTGCTTGTGCGAGT 1284

Search completed: August 14, 2003, 11:33:45 Job time : 1195 secs

Sequence 7090, Ap Sequence 5932, App Sequence 978, App Sequence 1, Appl Sequence 3503, Ap Sequence 3503, Ap Sequence 1819, Ap Sequence 180204, Sequence 180204, Sequence 2037, Ap Sequence 2037, App Sequence 17, Appl Sequence 359, Ap Sequence 8695, Ap Sequence 878, App Sequence 17, Appl Sequence 878, App Sequence 878, App Sequence 878, App Sequence 17, Appl Sequence 120644, Sequence 8189, Ap Sequence 5138, App Sequence 61105, A Sequence 61105, A Sequence 61105, A Sequence 61105, A Sequence 11363, A Sequence 5964, App Sequence 11363, A Sequence 11363, A Sequence 5965, Ap Sequence 11363, A Sequence 5965, App Sequence 11363, A Sequence 5965, App Sequence 11363, Ap Sequence 11363, Ap Sequence 5965, App Sequence 5965,

us-09-701-229-2.olip2n.rnpb

Title: Perfect score: Sequence:

OM protein

Run on:

Scoring table:

Word size: Searched:

```
Sequence 7912, Application US/09815242

Sequence 7912, Application US/09815242

GENERAL INFORMATION:
APPLICANT: Haselbeck, Robert
APPLICANT: Oblican, Kari L.
APPLICANT: Zyskind, Judith W.
APPLICANT: Wall, Daniel
APPLICANT: Travick, John D.
APPLICANT: Travick, John D.
APPLICANT: Travick, John D.
APPLICANT: Trananoto, Robert T.
APPLICANT: Anamanoto, Robert T.
APPLICANT: Xu, H. Howard
TITLE OF INVENTION: Identification of Essential Genes in
TITLE OF INVENTION: Prokaryotes
FILE REFERENCE: ELITRA 011A
FILE REFERENCE: ELITRA 011A
CURRENT APPLICATION NUMBER: 05/191,078
PRIOR APPLICATION NUMBER: 60/191,078
PRIOR FILING DATE: 2000-03-21
PRIOR FILING DATE: 2000-03-23
PRIOR FILING DATE: 2000-05-23
PRIOR APPLICATION NUMBER: 60/207,727
PRIOR APPLICATION NUMBER: 60/207,727
PRIOR APPLICATION NUMBER: 60/207,727
PRIOR APPLICATION NUMBER: 60/207,727
                                                                                                                                                                                                                                             13 US-10-27-632-100204

13 US-10-027-632-280432

13 US-10-027-632-280432

13 US-10-027-632-14190

14 US-10-259-165-369

15 US-09-915-242-8695

16 US-09-815-242-8695

17 US-10-259-165-369

18 US-09-815-242-8695

19 US-09-815-242-8695

10 US-10-156-761-3169

10 US-10-156-761-3169

11 US-10-156-761-3169

12 US-09-815-242-878

13 US-10-156-761-3169

14 US-10-156-761-3169

15 US-09-864-761-31989

16 US-09-864-761-31989

17 US-09-864-761-31989

18 US-09-960-352-41

19 US-09-960-352-41

10 US-09-960-352-41

11 US-09-960-352-3164

11 US-09-960-352-3164

11 US-09-960-352-3956

11 US-09-960-352-3956
                                                            14 US.10-329-960-1
US-00-815-242-3593
US-09-815-242-3597
US-09-815-242-1519
US-09-815-242-1487
US-09-815-242-1487
US-10-027-632-180203
US-10-027-632-180203
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     US-09-864-761-15475
US-10-027-632-85411
US-10-027-632-314877
US-10-027-632-288812
US-10-284-985-28
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   1350
1491
9025608
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               3333
3370
3370
3370
3370
4404
4404
467
5210
5210
5210
                                                                                                                                     US-09-815-242-7912
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Command line parameters:
-MODEL-frame+p2n.model.pup=x1p
-Q-/cgn2_1/USPTO_spool/US09701229/runat_09082003_161238_5080/app_query.fasta_1.647
-Q-/cgn2_1/USPTO_spool/US09701229/runat_09082003_161238_5080/app_query.fasta_1.647
-Q-/cgn2_1/USPTO_spool/US09701229/runat_0FFTX=0.1p2n.rnpb -MINMATCH=0.1
-LOOPCL-0 -LOOPEXT=0 -UNITS=bits -START=1 -END=-1 -MATRIX=0.1igo
-TRANS=human40.cdi -LIST=45 -DOCALIGN=200 -THR_SCORS=quality -THR_MIN=1
-ALIGN=15 -MODE-LOCAL -OUTFWT=pto -NORM=ext -HEAFSIZE=500 -MINLEN=25
-MAXLEN=200000000 -USER=US09701229_GCGN_1 1_333_@runat_09082003_161238_5080
-NCPU=6 -ICPU=3 -NO_MMAP -LARGEQUERY -NEG_SCORS=0 -WAIT -DSPBLOCK=100
-LONGLOG -DEY_TIMEOUT=120 -WARN_TIMEOUT=30 -THREADS=1 -XGAPOP=60 -XGAPEXT=60
-FGAPOP=6 -FGAPEXT=7 -YGAPOP=60 -YGAPEXT=60 -DELOP=6 -DELEXT=7
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Sequence 7912, Ap
                                                                                                                                                        (without alignments)
2864.564 Million cell updates/sec
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Description
                                                                                                                                                                                                                                                                          1 MSLIASDHFRIVVGLGKSGM.........MFKNFEERGRLFAKAVEELA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     // Cgn2_6/ptodata/1/pubpna/US07_pUBCOMB.seq:*
// Cgn2_6/ptodata/1/pubpna/US07_bUBCOMB.seq:*
// Cgn2_6/ptodata/1/pubpna/US06_bUB_DUB.seq:*
// Cgn2_6/ptodata/1/pubpna/US06_bUBCOMB.seq:*
// Cgn2_6/ptodata/1/pubpna/DS06_bUBCOMB.seq:*
// Cgn2_6/ptodata/1/pubpna/US08_bUBCOMB.seq:*
// Cgn2_6/ptodata/1/pubpna/US08_bUBCOMB.seq:*
// Cgn2_6/ptodata/1/pubpna/US08_bUBCOMB.seq:*
// Cgn2_6/ptodata/1/pubpna/US08_bUBCOMB.seq:*
// Cgn2_6/ptodata/1/pubpna/US08_bUBCOMB.seq:*
// Cgn2_6/ptodata/1/pubpna/US09_bUBCOMB.seq:*
// Cgn2_6/ptodata/1/pubpna/US09_bUBCOMB.seq:*
// Cgn2_6/ptodata/1/pubpna/US09_bUBCOMB.seq:*
// Cgn2_6/ptodata/1/pubpna/US09_bUBCOMB.seq:*
// Cgn2_6/ptodata/1/pubpna/US09_bUBCOMB.seq:*
// Cgn2_6/ptodata/1/pubpna/US09_bUBCOMB.seq:*
                                                                                                                                  August 14, 2003, 09:38:07; Search time 350 Seconds
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              /cgn2_6/ptodata/1/pubpna/US10A_PUBCOMB.seq:*
/cgn2_6/ptodata/1/pubpna/US10B_PUBCOMB.seq:*
/cgn2_6/ptodata/1/pubpna/US10_NEW_PUB.seq:*
/cgn2_6/ptodata/1/pubpna/US60_NEW_PUB.seq:*
/cgn2_6/ptodata/1/pubpna/US60_PUBCOMB.seq:*
GenCore version 5.1.6
Copyright (c) 1993 - 2003 Compugen Ltd.
                                                                                       nucleic search, using frame_plus_p2n model
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   100.0 1347 9 US-09-815-242-7912
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Total number of hits satisfying chosen parameters:
                                                                                                                                                                                                                                                                                                                                                                                                                                                             1504479 segs, 1118970152 residues
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Published_Applications_NA:*
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Post-processing: Listing first 45 summaries
                                                                                                                                                                                                                                                                                                                                              60.0
60.0
7.0
7.0
                                                                                                                                                                                                                                                                                                                                           ), Xgapext 6
), Ygapext 6
), Fgapext
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Minimum DB seq length: 25
Maximum DB seq length: 200000000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Query
Match Length DB
                                                                                                                                                                                                                              US-09-701-229-2
                                                                                                                                                                                                                                                                                                                                           60.0
60.0
6.0
6.0
                                                                                                                                                                                                                                                                                                                                           Xgapop
Ygapop
Fgapop
Delop
                                                                                                                                                                                                                                                                                                                        OFIGO
```

Database

448 Score

ਜ਼ਿ ਹਿਤਾ:

٠ ي Result

Sequence 21561, A Sequence 15475, Sequence 15471, A Sequence 314877, Sequence 288812,

Sequence 28, Ap Sequence 14821,

```
1141 GACGCCGGGCTGATTGCCCAGGCACTGGGCAACGCGGGTACCGCTGGTGCGCGCTGCGCGAACG
                                                                                                                                                                                                                                                                              341 GlyalaAspIleAspClyLysLeuValLeuLeuAlaGlyGlyAspGlyLysGlyAlaAsp
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   401 LeuAspGluAlaValArgGlnAlaAlaGluLeuAlaArgGluGlyAspAlaValLeuLeu
                                                                                                                                                                                                                          TyrTyrAspAspSerLysAlaThrAsnValGlyAlaAlaLeuAlaAlaIleGluGlyLeu
                                                                                                                                                                                                                                                                                                                                               1021 GGTGCCGACATCGACGGCAAGCTGGTGCTGCTCGCCGGCGGAGACGGCAAGGGCGCGAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 LysAlaPheSerGlyLeuAlaHisArgCysGlnTrpValArgGluArgGlnGlyValSer
                                                                                                                                                                                                                                                                                                                                                                                                                               AspalaGlyLeuIleAlaGlnAlaLeuGlyAsnAlaValProLeuValArgValAlaThr
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ţ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Genes
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Essential
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      GENERAL INFORMATION:
GENERAL INFORMATION:
APPLICANT: Haselbeck, Robert
APPLICANT: Oblsen, Karl L.
APPLICANT: Syskind, Judith W.
APPLICANT: Wall, Daniel
APPLICANT: Wall, Daniel
APPLICANT: Trawick, John D.
APPLICANT: Trawick, John D.
APPLICANT: Trawick, John D.
APPLICANT: Trawick, John D.
APPLICANT: Yamamoto, Robert T.
APPLICANT: Yamamoto, Robert T.
APPLICANT: Xu, H. Howard
TITLE OF INVENTION: TGentlication of Essent:
TITLE OF INVENTION: Prokaryotes
FILE REFERENCE: ELITRA.011A
CURRENT APPLICATION NUMBER: 60/191,078
PRIOR FILING DATE: 2000-03-21
PRIOR FILING DATE: 2000-05-21
PRIOR FILING DATE: 2000-05-23
PRIOR FILING DATE: 2000-05-26
PRIOR FILING DATE: 2000-05-26
PRIOR FILING DATE: 2000-10-23
PRIOR FILING DATE: 2000-10-23
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ; Sequence 7090, Application US/09815242; Patent No. US20020061569A1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              US-09-815-242-7090
                     661
                                                                                                                                                                                                                                                                                                                                                                                                                               381
                                                                                                                                                                                                              301
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             1201
                                                                                                                                                        281
                                                                                                                                                                                   841
                                                                                                                                                                                                                                                                 321
                                              ò
                                                                        셤
                                                                                                                          g
                                                                                                                                                        à
                                                                                                                                                                                 셤
                                                                                                                                                                                                            à
                                                                                                                                                                                                                                    g
                                                                                                                                                                                                                                                                 õ
                                                                                                                                                                                                                                                                                      g
                                                                                                                                                                                                                                                                                                                    ò
                                                                                                                                                                                                                                                                                                                                              g
                                                                                                                                                                                                                                                                                                                                                                          à
                                                                                                                                                                                                                                                                                                                                                                                               g
                                                                                                                                                                                                                                                                                                                                                                                                                               ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                        음
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ô
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     셤
                                                                                                                                                                                                                                                                                                                                                                                                                                       140
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            420
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    GlyGlyAsnLeuGlyThrProAlaLeuAspLeuLeuAlaAspAspIleGluLeuTyrVal 160
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 480
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       200
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           900
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      220
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                99
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      221 ThrArgProLeuIleAlaAspThrValProCysTrpSerPheGlyLeuAsnLysProAsp 240
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          AACCCGCCGGAGCTGGCCACCTGCGTGCCCAGTATCCGCAGGTGGAAGTGCGTTGCGGC 180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        LeuArgThrProAlaLeuValGlnAlaAlaAlaLysGlyValArgIleSerGlyAspIle 100
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   80
                                                                                                                                                                                                                                                                                                                                                                                       20
                                                                                                                                                                                                                                                                                                                                                                                                                9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                9
                                                                                                                                                                                                                                                                                                                                                                                     MetSerLeuIleAlaSerAspH1sPheArgIleValValGlyLeuGlyLysSerGlyMet
                                                                                                                                                                                                                                                                                                                                                                                                 AsnProProGluLeuAlaThrLeuArgAlaGlnTyrProGlnValGluValArgCysGly
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 SerThrValThrThrLeuValGlyGluMetAlaValAlaAlaAspLysArgValAlaVal
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               GGGGCAACCTCGGCACCCCGGCGCTCGACCTGCCGACGACGACGACGTGTACGTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ValLeuAsnValSerGluAspHisMetAspArgTyrAspGlyMetAlaAspTyrHisLeu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   AlaLysHisArgIlePheArgGlyAlaArgGlnValValValAsnArgAlaAspAlaLeu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   GluLeuAspAlaGluPheLeuCysSerAlaArgGluLeuTyrValSerProGlyLeuSer
                                                                                                                                                                                                                                                               1347
448
0
0
0
                                                                                                                                                                                                                                                              Length:
Matches:
Conservative:
Mismatches:
Indels:
                                                                                                                                                                                                                                                                                                                                                        US-09-701-229-2 (1-448) x US-09-815-242-7912 (1-1347)
PRIOR FILING DATE: 2000-10-23
PRIOR APPLICATION NUMBER: 60/253,625
PRIOR FILING DATE: 2000-11-27
PRIOR FILING DATE: 2000-11-27
PRIOR APPLICATION NUMBER: 60/257,931
PRIOR PELICATION NUMBER: 60/269,308
PRIOR FILING DATE: 2001-02-16
NUMBER OF SEQ ID NOS: 14110
SEQ ID NO 7912
LENGTH: 1347
                                                                                                                                                                  ORGANISM: Pseudomonas aeruginosa
                                                                                                                                                                                                                                                                         448.00
100.008
100.008
                                                                                                                                                                                           ; NAME/KEY: CDS
; LOCATION: (1)...(1347)
US-09-815-242-7912
                                                                                                                                                                                                                                                                                     Percent Similarity:
Best Local Similarity:
Query Match:
                                                                                                                                                                                                                                                   Alignment Scores:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         361
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             41
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     81
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      301
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          541
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           101
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    141
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               421
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   201
                                                                                                                                                        TYPE: DNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             601
                                                                                                                                                                                   FEATURE:
                                                                                                                                                                                                                                                              Pred No.:
```

셤

à

g

õ ద à g à g ò g ò g ö g à 셤 ò 셤 à 임 ò

ð

1020

1080

380

360

1140

1200

420

400

1260

```
δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 157 GlubeuTyrValLeuGlubeuSerSerPheGlnbeuGluThr 170
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    157 GluLeuTyrValLeuGluLeuSerSerPheGlnLeuGluThr 170
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         US-09-741-009-239

Sequence 259, Application US/09741669

Patent No. US20020022718A1

GENERAL INFORMATION:

APPLICANT: FORSYLIA, R. Allyn

APPLICANT: Ohlsen, Kari L.

APPLICANT: Zyskind, Judith W.

TITLE OF INVENTION: proliferation of E. coli

TITLE OF INVENTION: proliferation of E. coli

TITLE OF INVENTION: WINBER: US/09/741,669

CURRENT APPLICATION NUMBER: US/09/741,669

CURRENT FILING DATE: 2000-12-19

PRIOR PILING DATE: 1999-12-23

NUMBER OF SEQ ID NOS: 481

SOPTWARE: FastSEQ for Windows Version 4.0
                                                                                                                                                                                                                                                                                                                                                                            Conservative:
Mismatches:
Indels:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Conservative:
Mismatches:
Indels:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                             US-09-701-229-2 (1-448) x US-09-815-242-7090 (1-1314)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                US-09-701-229-2 (1-448) x US-09-741-669-259 (1-1317)
                                                                                                                                                                                                                                                                                                                                          Length:
Matches:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Length:
Matches:
   PRIOR FILING DATE: 2000-11-27
PRIOR PLILING DATE: 2000-11-27
PRIOR APPLICATION NUMBER: 60/257,931
PRIOR PILING DATE: 2000-12-22
PRIOR PLILING DATE: 2001-02-16
PRIOR FILING DATE: 2001-02-16
NUMBER OF SEQ ID NOS: 14110
SOFTWARE: FastSEQ for Windows Version 4.0
SEQ ID NO 7090
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Gaps:
APPLICATION NUMBER: 60/253,625
                                                                                                                                                                                                        ORGANISM: Haemophilus influenzae
                                                                                                                                                                                                                                                                                                                                          0.000202
                                                                                                                                                                                                                                                                                                                                                            14.00
100.00%
100.00%
3.12%
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               14.00
100.00%
100.00%
3.12%
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               0.000203
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            TYPE: DNA
ORGANISM: Escherichia coli
                                                                                                                                                                                                                                                               ..(1314)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ...(1317)
                                                                                                                                                                                                                                                                                                                                                                            Percent Similarity:
Best Local Similarity:
Query Match:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Percent Similarity:
Best Local Similarity:
                                                                                                                                                                                                                                                                 ; LOCATION: (1)...
US-09-815-242-7090
                                                                                                                                                                                                                                             NAME/KEY: CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                US-09-741-669-259
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 SOFTWARE: Fast
SEQ ID NO 259
LENGTH: 1317
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ; LOCATION: (1)
US-09-741-669-259
                                                                                                                                                                                                                                                                                                                      Alignment Scores:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    NAME/KEY: CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Alignment Scores:
                                                                                                                                                                                        TYPE: DNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Query Match:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  FEATURE:
                                                                                                                                                                                                                           FEATURE
                                                                                                                                                                                                                                                                                                                                              ..
80
..
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   à
```

US-09-815-242-5932

```
APPLICANT: Oblisher, Kari L.
APPLICANT: Oblisher, Kari L.
APPLICANT: Tradic Judith W.
APPLICANT: Tradic Judith W.
APPLICANT: Tradic Judith W.
APPLICANT: Tradic Judith D.
TITLE OF INVENTION: Identification of Essential Genes in TITLE OF INVENTION: UNMBER: 60/29/815,242
CURRENT FILING DATE: 2000-03-21
PRIOR APPLICATION NUMBER: 60/206,848
PRIOR FILING DATE: 2000-05-23
PRIOR FILING DATE: 2000-05-23
PRIOR FILING DATE: 2000-05-3
PRIOR FILING DATE: 2000-10-23
PRIOR FILING DATE: 2000-12-22
PRIOR PELLORITON NUMBER: 60/253,625
PRIOR FILING DATE: 2000-12-22
PRIOR APPLICATION NUMBER: 60/253,635
PRIOR FILING DATE: 2001-02-16
NUMBER OF SEQ ID NOS: 14110
SSOFWARE: ESSESSO FOR Windows Version 4.0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        157 GluLeuTyrValLeuGluLeuSerSerPheGlnLeuGluThr 170
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  457 GAACTGTACGTGCTGGAACTGTCGAGCTTCCAGCTGGAAACC 498
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     APPLICANT: Tranick, John D.
APPLICANT: Carr, Grant J.
APPLICANT: Tanamoto, Robert T.
APPLICANT: Yanamoto, Robert T.
APPLICANT: You, H. Howard
TITLE OF INVENTION: Identification of Essential Genes in
TITLE OF INVENTION: Prokaryotes
FILE REFERENCE: ELITRA.011A
CURRENT APPLICATION NUMBER: US/09/815,242
CURRENT FILING DATE: 2001-03-21
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Conservative:
Mismatches:
Indels:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      US-09-701-229-2 (1-448) x US-09-815-242-5932 (1-1317)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Matches:
Sequence 5932, Application US/09815242 Patent No. US20020061569A1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Sequence 9978, Application US/09815242
Patent No. US20020061569A1
GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            APPLICANT: Haselbeck, Robert
APPLICANT: Ohlsen, Kari L.
AAPPLICANT: Zyskind, Judith W.
APPLICANT: Wall, Daniel
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         0.000203
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          100.00%
100.00%
3.12%
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              TYPE: DNA ORGANISM: Escherichia coli
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Percent Similarity:
Best Local Similarity:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ; NAME/KEY: CDS
; LOCATION: (1)...
US-09-815-242-5932
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 US-09-815-242-9978
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Alignment Scores:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    SEQ ID NO 5932
LENGTH: 1317
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Query Match:
```

```
NAME/KEY: misc_feature
LOCATION: (51602)..(51602)
OTHER INFORMATION: n equals a, t, g or c
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      or c
                                                                                                       ö
                                                                                                                                                                                                                                                                                       ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          t, g or
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       NAME/KEY: misc_feature
LOCATION: (65313)..(65313)
OTHER INFORMATION: n equals a, t, g or
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              t, g or
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        gor
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 gor
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        t, g or
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Б
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        NAME/KEY: misc_feature
LOCATION: (44416)..(44416)
OTHER INFORMATION: n equals a,
              OTHER INFORMATION: n equals a,
                                                                                                                                                                    LOCATION: (36543)..(36543)
OTHER INFORMATION: n equals a,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             NAME/KEY: misc_feature
LOCATION: (44905)..(44905)
OTHER INFORMATION: n equals a,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       LOCATION: (45593)..(45593)
OTHER INFORMATION: n equals a,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    NAME/KEY: misc_feature
LOCATION: (51334)..(51334)
OTHER INFORMATION: n equals a,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  NAME, KEY: misc_feature
LOCATION: (51786)..(51786)
OTHER INFORMATION: n equals a,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              NAME/KEY: misc_feature
LOCATION: (51805)..(51805)
OTHER INFORMATION: n equals a,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     NAME/KEY: misc_feature
LOCATION: (55369)..(55369)
OTHER INFORMATION: n equals a,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                NAME/KEY: misc_feature
LOCATION: (65309)..(65309)
OTHER INFORMATION: n equals a,
                                                                                                                                                                                                                                   NAME/KEY: misc_feature
LOCATION: (36551)..(36551)
OOTHER INFORMATION: n equals
FEATURE:
                                                                                                                                                                                                                                                                                                                                                                                          FEATURE:
NAME/KEY: misc_feature
LOCATION: (40808)..(40810)
OTHER INFORMATION: n equals
                                                   NAME/KEY: misc_feature
LOCATION: (29298)..(29298)
OTHER INFORMATION: n equals
                                                                                                                                                                                                                                                                                                                        NAME/KEY: misc_feature
LOCATION: (36636)..(36636)
OTHER INFORMATION: n equals
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    NAME/KEY: misc_feature
LOCATION: (44975)..(44975)
OTHER INFORMATION: n equals
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    NAME/KEY: misc_feature
LOCATION: (45732)..(45732)
OTHER INFORMATION: n equals
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           NAME/KEY: misc_feature
LOCATION: (47036)..(47036)
OTHER INFORMATION: n equals
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  NAME/KEY: misc_feature
LOCATION: (45593)..(455
                                                                                                                                                 NAME/KEY: misc_feature
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Sequence 1, Application US/10329960

Sequence 1, Application US/10329960

Sequence 1, Application No. US20030099277A1

GENERAL INFORMATION:

APPLICANT: Fleischmann et al.

TITLE OF INVENTION: Thereof, and Uses Thereof

TITLE OF INVENTION: Thereof, and Uses Thereof

TITLE OF INVENTION: Thereof, and Uses Thereof

CURRENT APPLICATION NUMBER: US/10/329,960

CURRENT FILING DATE: 2003-01-02

PRIOR APPLICATION NUMBER: US 08/487,429

PRIOR FILING DATE: 1995-60-07

PRIOR PILING DATE: 1995-60-07

PRIOR FILING DATE: 1995-04-21

NUMBER OF SEQ ID NOS: 1

SOFTWARE: Patentin version 3.1

SEQ ID NO 1

LEASTH: 1830121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Length:
Matches:
Conservative:
Mismatches:
Indels:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   US-09-701-229-2 (1-448) x US-09-815-242-9978 (1-1317)
PRIOR APPLICATION NUMBER: 60/191,078
PRIOR FILING DATE: 2000-03-21
PRIOR PELICATION NUMBER: 60/206,848
PRIOR FILING DATE: 2000-05-23
PRIOR FILING DATE: 2000-05-23
PRIOR PILICATION NUMBER: 60/207,727
PRIOR PILICATION NUMBER: 60/207,727
PRIOR PILICATION NUMBER: 60/257,731
PRIOR FILING DATE: 2000-10-23
PRIOR FILING DATE: 2000-11-27
PRIOR PILING DATE: 2000-11-27
PRIOR FILING DATE: 2001-02-16
NUMBER: 60/259,308
NUMBER: OF SEQ ID NOS: 14110
SEQ ID NOS: 14110
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Gaps:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            NAME/KEY: misc_feature
LOCATION: (9921)..(9921)
OTHER INFORMATION: n equals a, t, g or c
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      TYPE: DNA
ORGANISM: Haemophilus influenzae
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       NAME/KEY: misc_feature
LOCATION: (4747)..(4747)
OTHER INFORMATION: n equals a,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               0.000203
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    14.00
100.00%
100.00%
3.12%
                                                                                                                                                                                                                                                                                                                                                                                                               TYPE: DNA ORGANISM: Salmonella typhi
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              FEATURE:
NAME/KEY: misc_feature
LOCATION: (10150)..(10150)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ; LOCATION: (1)...(1317)
US-09-815-242-9978
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Percent Similarity:
Best Local Similarity:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 NAME/KEY: CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Alignment Scores:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          -10-329-960-1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              FEATURE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Query Match:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Pred. No.:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         RESULT 6
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ð
```

```
or
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  or
                                                                                                                                                                                                                                                                                                                      ä
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            or
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     or
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     NAME/KEY: misc_feature
LOCATION: (122167)..(122167)
OTHER INFORMATION: n equals a, t, g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  NAME/KEY: misc_feature
LOCATION: (139910)..(139910)
OTHER INFORMATION: n equals a, t, g
                                                                                                                                                                                                                                                                                                                                                                                                           9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           NAME/KEY: misc_feature
LOCATION: (145058)..(145058)
THERR INFORMATION: n equals a, t,
FEATURE:
                                                                                                                                                                                                                                                                  NAME/KEY: misc_feature
LOCATION: (105121)..(105121)
OTHER INFORMATION: n equals a, t,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            NAME/KEY: misc_feature
LOCATION: (119924)..(119924)
OTHER INFORMATION: n equals a, t,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         NAME/KEY: misc_feature
LOCATION: (140398)..(140398)
OTHER INFORMATION: n equals a, t,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     NAME/KEY: misc_feature
LOCATION: (120038)..(120038)
OTHER INFORMATION: n equals a, t,
NAME/KEY: misc_feature
COCATION: (80024)..(80024)
OTHER INFORMATION: n equals a, t,
FEATURE:
                                                                      NAME/KEY: misc_feature
LOCATION: (100091)..(100091)
OTHER INFORMATION: n equals a,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      NAME/KEY: misc_feature
LOCATION: (131360)..(131360)
OTHER INFORMATION: n equals a,
                                                                                                                                                                         NAME/KEY: misc_feature
LOCATION: (102696)..(102696)
OTHER INFORMATION: n equals a,
                                                                                                                                                                                                                                                                                                                                                         NAME/KEY: misc_feature
LOCATION: (107248)..(107248)
OTHER INFORMATION: n equals a,
                                                                                                                                                                                                                                                                                                                                                                                                                                                  NAME/KEY: misc_feature
LOCATION: (117136)..(117136)
OTHER INFORMATION: n equals a,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            NAME/KEY: misc_feature
LOCATION: (122336)..(122336)
OTHER INFORMATION: n equals a,
FEATURE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       NAME/KEY: misc_feature
LOCATION: (119750)..(119750)
OTHER INFORMATION: n equals a,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            NAME/KEY: misc_feature
LOCATION: (121344)..(121344)
OTHER INFORMATION: n equals a,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    NAME/KEY: misc_feature
LOCATION: (131340)...(131340)
OTHER INFORMATION: n equals a,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  NAME/KEY: misc_feature
LOCATION: (142750)..(142750)
OTHER INFORMATION: n equals a,
```

```
1203588 GAACTTTATGTACTAGAGCTTTCTAGTTTCAGCTTGAGACA 1203629
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        APPLICANT: Haselbeck, kooper
APPLICANT: Haselbeck, kooper
APPLICANT: Oblsen, Kari L.
APPLICANT: 298kind, Judith W.
APPLICANT: Zyskind, Judith W.
APPLICANT: Trawick, John D.
APPLICANT: Trawick, John D.
APPLICANT: Trawick, John D.
APPLICANT: Yamamoto, Robert T.
APPLICANT: Xu, H. Howard
TITLE OF INVENTION: Hortification of Essential Genes in
TITLE OF INVENTION: Prokaryotes
FILE REFERENCE: ELITRAN.011A
CURRENT APPLICATION NUMBER: 05/191,078
PRIOR APPLICATION NUMBER: 60/201,108
PRIOR APPLICATION NUMBER: 60/202
PRIOR APPLICATION NUMBER: 60/203
PRIOR FILING DATE: 2000-05-23
PRIOR FILING DATE: 2000-05-26
PRIOR FILING DATE: 2000-11-23
PRIOR APPLICATION NUMBER: 60/253,625
PRIOR FILING DATE: 2000-11-27
PRIOR APPLICATION NUMBER: 60/253,625
PRIOR APPLICATION NUMBER: 60/253,931
PRIOR FILING DATE: 2000-11-27
PRIOR APPLICATION NUMBER: 60/269,308
PRIOR FILING DATE: 2001-02-16
NUMBER OF SEQ ID NOS: 14110
SOFTWARRE: FastSEQ for Windows Version 4.0
SEQ ID NO 3503
LENGTH: 135
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     1830121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Length:
Matches:
Conservative:
Mismatches:
Indels:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   US-09-701-229-2 (1-448) x US-10-329-960-1 (1-1830121)
                                                                                                                                                                                                                                                                                                                                                      NAME/KEY: misc_feature
LOCATION: (152500)..(152500)
OTHER INFORMATION: n equals a, t, g or c
                                                                                                                         ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Sequence 3503, Application US/09815242
Patent No. US20020061569A1
GENERAL INFORMATION:
APPLICANT: Haselbeck, Robert
                                                                                                                                                              NAME/KEY: misc_feature
LOCATION: (147197)..(147197)
OTHER INFORMATION: n equals a,
LOCATION: (145171)..(145171)
OTHER INFORMATION: n equals
                                                                  NAME/KEY: misc_feature
LOCATION: (145942)..(145942)
OTHER INFORMATION: n equals
FEATURE:
                                                                                                                                                                                                                                                            NAME/KEY: misc_feature
LOCATION: (150841)..(150841)
OTHER INFORMATION: n equals
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                0.129
14.00
100.008
100.008
3.128
                                                                                                                                                                                                                                                                                                                                                                                                                                                      NAME/KEY: misc_feature
LOCATION: (152530)..(152530)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Percent Similarity:
Best Local Similarity:
Query Match:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     US-09-815-242-3503/c
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Alignment Scores:
                                                                                                                                                                                                                                                                                                                                    FEATURE:
                                                                                                                                                                                                                                                                                                                                                                                                                                FEATURE:
```

```
TITLE OF INVENTION: Identification of Essential Genes in TITLE OF INVENTION: Identification of Essential Genes in TITLE OF INVENTION: Identification of Essential Genes in TITLE OF INVENTION: PROKARYOLES

CURRENT FILING DATE: 2001-03-21

PRIOR APPLICATION NUMBER: 60/191,078

PRIOR APPLICATION NUMBER: 60/191,078

PRIOR APPLICATION NUMBER: 60/206,848

PRIOR FILING DATE: 2000-05-23

PRIOR FILING DATE: 2000-05-26

PRIOR FILING DATE: 2000-10-23

PRIOR FILING DATE: 2000-10-23

PRIOR FILING DATE: 2000-11-27

PRIOR FILING DATE: 2000-11-27

PRIOR FILING DATE: 2000-11-27

PRIOR FILING DATE: 2000-12-22

PRIOR FILING DATE: 2000-12-22

PRIOR FILING DATE: 2000-13-22

PRIOR FILING DATE: 2000-13-22
                                                                                                                                                             Conservative:
Mismatches:
Indels:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Conservative:
Mismatches:
Indels:
                                                                                                                                                                                                                                                                            US-09-701-229-2 (1-448) x US-09-815-242-3503 (1-135)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             US-09-701-229-2 (1-448) x US-09-815-242-3597 (1-135)
                                                                                                                Length:
Matches:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Length:
Matches:
                                                                                                                                                                                                                                                                                                                         418 ValLeuLeuSerProAlaCysAlaSer 426
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           NUMBER OF SEQ ID NOS: 14110
SOFTWARE: FastSEQ for Windows Version 4.0
                                                                                                                                                                                                                                                                                                                                               107 GTATTATTGTCACCTGCTTGTGCGAGT 81
                                                                                                                                                                                                                                                                                                                                                                                                                                                             Sequence 3597, Application US/09815242
Patent No. US20020061569A1
PERERAL INFORMATION:
APPLICANT: Haselbeck, Robert
TYPE: DNA ORGANISM: Staphylococcus aureus
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Staphylococcus aureus
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Yamamoto, Robert T.
Xu, H. Howard
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Ohlsen, Kari L.
Zyskind, Judith W.
Wall, Daniel
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               100.00%
100.00%
2.01%
                                                                                                                                                           00.00%
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Trawick, John D. Carr, Grant J.
                                                                                                                                                         Percent Similarity:
Best Local Similarity:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Percent Similarity:
Best Local Similarity:
                                                                                                                                                                                                                                                                                                                                                                                                                                         JS-09-815-242-3597/c
                                        US-09-815-242-3503
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   US-09-815-242-3597
                                                                                      Alignment Scores:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Alignment Scores:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        SEQ ID NO 3597
LENGTH: 135
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      TYPE: DNA
                                                                                                                                                                                                         Query Match:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ORGANISM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Query Match:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Pred. No.:
                                                                                                                Pred. No.:
                                                                                                                                                                                                                                                                                                                         ò
```

418 ValLeuLeuSerProAlaCysAlaSer 426

ò

107 GTATTATTGTCACCTGCTTGTGCGAGT 81

RESULT

```
APPLICANT: Xu, H. Howard
IITLE OF INVENTION: Identification of Essential Genes in
IITLE OF INVENTION: Prokaryotes
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ITLE OF INVENTION: Identification of Essential Genes in ITLE OF INVENTION: Prokaryotes
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Conservative:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       US-09-701-229-2 (1-448) x US-09-815-242-1519 (1-216)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Mismatches:
Indels:
                                                                                                                                                                                                                                                                                                                                                                                                                                           PRIOR FILING DATE: 2000-05-23
PRIOR PLILING DATE: 2000-05-23
PRIOR FILING DATE: 2000-05-23
PRIOR FILING DATE: 2000-05-26
PRIOR FILING DATE: 2000-05-26
PRIOR FILING DATE: 2000-10-23
PRIOR PILING DATE: 2000-11-27
PRIOR APPLICATION NUMBER: 60/253,625
PRIOR APPLICATION NUMBER: 60/253,931
PRIOR APPLICATION NUMBER: 60/269,308
PRIOR FILING DATE: 2000-12-22
PRIOR FILING DATE: 2001-02-16
NUMBER OF SEQ ID NOS: 14110
SOFTWARE: FASTERO for Windows Version 4.0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Length:
Matches:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     418 ValLeuLeuSerProAlaCysAlaSer 426
                                                                                                                                                                                                                                                                                                                               CURRENT APPLICATION NUMBER: US/09/815,242 CURRENT FILING DATE: 2001-03-21
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         CURRENT APPLICATION NUMBER: US/09/815,242
CURRENT FILING DATE: 2001-03-21
PRIOR APPLICATION NUMBER: 60/191,078
PRIOR FILING DATE: 2000-03-21
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Gaps:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                34 GTATTATTGTCACCTGCTTGTGCGAGT
Sequence 1519, Application US/09815242
Patent No. US20020061569A1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Sequence 1487, Application US/09815242 Patent No. US20020061569A1
                                                                                                                                                                                                                                                                                                                                                                                PRIOR APPLICATION NUMBER: 60/191,078
                                                                                                                                                                                                                                                                                                                                                                                                      PRIOR FILING DATE: 2000-03-21
PRIOR APPLICATION NUMBER: 60/206,848
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ; ORGANISM: Staphylococcus aureus
US-09-815-242-1519
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Ohlsen, Kari L.
Zyskind, Judith W.
Wall, Daniel
Trawick, John D.
Carr, Grant J.
Yamanoto, Robert T.
Xu, H. Howard
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  HITLE OF INVENTION: Prokaryotes
FILE REFERENCE: ELITRA.011A
                                                               T: Haselbeck, Robert
T: Ohlsen, Karl L.
T: Zyskind, Judith W.
T: Wall, Daniel
                                                                                                                                                              : Trawick, John D.
: Carr, Grant J.
: Yamamoto, Robert T.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    100.00%
100.00%
2.01%
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Haselbeck, Robert
                                                                                                                                                                                                                                                                                                            FILE REFERENCE: ELITRA.011A
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Best Local Similarity:
Query Match:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          US-09-815-242-1487/c
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Percent Similarity:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Alignment Scores:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            SEQ ID NO 1519
LENGTH: 216
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          TYPE: DNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    g
```

```
APPLICANT: Yamamoto, Robert T.
APPLICANT: Xu, H. Howard
TITLE OF INVENTION: Identification of Essential Genes in
TITLE OF INVENTION: Prokaryotes
FILE REFERENCE: ELITRA 0.11A
CURRENT APPLICATION NUMBER: US/09/815,242
CURRENT FILING DATE: 2001-03-21
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Length:
Matches:
Conservative:
Mismatches:
Indels:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              US-09-701-229-2 (1-448) x US-09-815-242-1487 (1-327)
    PRIOR APPLICATION NUMBER: 60/207,727
PRIOR PILING DATE: 2000-05-26
PRIOR PELING DATE: 2000-05-26
PRIOR APPLICATION NUMBER: 60/242,578
PRIOR APPLICATION NUMBER: 60/25,625
PRIOR APPLICATION NUMBER: 60/25,931
PRIOR PILING DATE: 2000-11-27
PRIOR PELING DATE: 2000-11-27
PRIOR PILING DATE: 2000-12-22
PRIOR PILING DATE: 2001-02-16
NUMBER: 60/269,308
PRIOR FILING DATE: 2001-02-16
NUMBER: PRIOR PILING DATE: 2001-02-16
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    418 ValLeuLeuSerProAlaCysAlaSer 426
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 145 GTATTATTGTCACCTGCTTGTGCGAGT 119
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Gaps:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              NUMBER OF SEQ ID NOS: 14110
SOFTWARE: FastSEQ for Windows Version 4.0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          CURRENT FILING DATE: 2001-03-21
PRIOR APPLICATION NUMBER: 60/191,078
PRIOR FILING DATE: 2000-03-21
PRIOR APPLICATION NUMBER: 60/206,848
PRIOR FILING DATE: 2000-05-23
PRIOR FILING DATE: 2000-05-26
PRIOR FILING DATE: 2000-05-26
PRIOR APPLICATION NUMBER: 60/207,727
PRIOR APPLICATION NUMBER: 60/242,578
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Sequence 2986, Application US/09815242
Patent No. US20020061569Al
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                PRIOR FILING DATE: 2000-10-23
PRIOR APPLICATION NUMBER: 60/253,625
PRIOR FILING DATE: 2000-11-27
PRIOR APPLICATION NUMBER: 60/257,931
PRIOR FILING DATE: 2000-12-22
PRIOR APPLICATION NUMBER: 60/269,308
APPLICATION NUMBER: 60/206,848
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ; TYPE: DNA
; ORGANISM: Staphylococcus aureus
US-09-815-242-1487
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      , ORGANISM: Staphylococcus aureus US-09-815-242-2986
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ohlsen, Kari L.
Zyskind, Judith W.
Wall, Daniel
Trawick, John D.
Carr, Grant J.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           100.00%
100.00%
2.01%
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      APPLICANT: Haselbeck, Robert
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Percent Similarity:
Best Local Similarity:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               -09-815-242-2986/c
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Alignment Scores:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              TYPE: DNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Query Match:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Pred. No.:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ð
```

```
NESULI 12.

NESULI 12.

NESULI 12.

NESULI 12.

Sequence 180203, Application US/10027632

Sequence 180203, Application US/10027632

Sequence 180203, Application US/10027632

TITLE UP INVENTION: Identification and Mapping of Single Nucleotide

TITLE OF INVENTION: DOLYMOTPHISMS in the Human Genome

TITLE OF INVENTION: DOLYMOTPHISMS in the Human Genome

FILE REFERENCE: 108827.129

CURRENT APPLICATION NUMBER: US/10/027,632

CURRENT APPLICATION NUMBER: US 60/18,006

PRIOR FILING DATE: 2000-04-20

PRIOR FILING DATE: 2000-04-20

PRIOR PELING DATE: 2000-03-29

PRIOR PELING DATE: 1999-11-23

PRIOR PELING DATE: 1999-11-3

PRIOR FILING DATE: 1999-11-3

PRIOR FILING DATE: 1999-11-3

PRIOR PELING DATE: 1999-11-3

PRIOR APPLICATION NUMBER: US 60/15,358

PRIOR PELING DATE: 1999-11-3

PRIOR PELING DATE: 1999-11-3

PRIOR PELING DATE: 1999-108-08-09

PRIOR FILING DATE: 1999-108-08-09
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Sequence 180204, Application US/10027632
GENERAL INFORMATION:
APPLICANT: Wang, David
TITLE OF INVENTION: Identification and Mapping of Single Nucleotide
TITLE OF INVENTION: Polymorphisms in the Human Genome
FILE REFERENCE: 108827.129
CURRENT APPLICAND NUMBER: US/10/027,632
CURRENT FILING DATE: 2002-04-30
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               US-09-701-229-2 (1-448) x US-10-027-632-180203 (1-429)
                                                                      Conservative:
Mismatches:
Indels:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Conservative:
Mismatches:
                                                                                                                                                                                                 US-09-701-229-2 (1-448) x US-09-815-242-2986 (1-383)
                          Length:
Matches:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Matches:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Length:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              418 ValLeuLeuSerProAlaCysAlaSer 426
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  NUMBER OF SEQ ID NOS: 325720
SOFTWARE: FastSEQ for Windows Version 4.0
                                                                                                                                                  Gaps:
                                                                                                                                                                                                                                                                          99 GTATTATTGTCACCTGCTTGTGCGAGT 13
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       PRIOR APPLICATION NUMBER: US 60/218,006 PRIOR FILING DATE: 2000-07-12
                                                                      100.00%
100.00%
2.01%
                                                                 Percent Similarity:
Best Local Similarity:
Query Match:
DB:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Percent Similarity:
Best Local Similarity:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            US-10-027-632-180204/c
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            US-10-027-632-180203
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      SEQ ID NO 180203
Alignment Scores:
Pred. No.:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Alignment Scores:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ORGANISM:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Query Match:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Pred. No.:
```

```
TITLE OF INVENTION: Identification of Essential Genes in TITLE OF INVENTION: Identification of Essential Genes in TITLE OF INVENTION: PROMARYOLES
FILE REFERENCE: ELITRA. 011A
CURRENT APPLICATION NUMBER: US/09/815,242
CURRENT FILING DATE: 2001-03-21
PRIOR FILING DATE: 2000-03-21
PRIOR FILING DATE: 2000-03-23
PRIOR FILING DATE: 2000-05-26
PRIOR APPLICATION NUMBER: 60/205,848
PRIOR FILING DATE: 2000-05-26
PRIOR FILING DATE: 2000-10-23
PRIOR FILING DATE: 2000-10-23
PRIOR FILING DATE: 2000-11-27
PRIOR FILING DATE: 2000-11-27
PRIOR FILING DATE: 2000-11-27
PRIOR FILING DATE: 2000-11-27
PRIOR FILING DATE: 2000-12-22
PRIOR APPLICATION NUMBER: 60/255,931
PRIOR FILING DATE: 2000-11-27
PRIOR APPLICATION NUMBER: 60/255,931
PRIOR FILING DATE: 2000-12-22
PRIOR PILING DATE: 2000-12-22
PRIOR FILING DATE: 2001-02-16
PRIOR FILING DATE: 2001-02-16
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       US-09-701-229-2 (1-448) x US-10-027-632-180204 (1-429)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Conservative:
Mismatches:
Indels:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Length:
Matches:
PRIOR APPLICATION NUMBER: US 60/198,676
PRIOR FILING DATE: 2000-04-20
PRIOR FILING DATE: 2000-03-29
PRIOR FILING DATE: 2000-03-29
PRIOR FILING DATE: 2000-02-24
PRIOR APPLICATION NUMBER: US 60/185,218
PRIOR APPLICATION NUMBER: US 60/167,363
PRIOR PRILING DATE: 1999-11-23
PRIOR FILING DATE: 1999-11-23
PRIOR FILING DATE: 1999-02-28
PRIOR FILING DATE: 1999-09-28
PRIOR FILING DATE: 1999-08-09
NUMBER OF SEQ ID NOS: 325720
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Gaps:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              NUMBER OF SEQ ID NOS: 14110
SOFTWARE: FastSEQ for Windows Version 4.0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Sequence 2037, Application US/09815242
Patent No. US20020061569A1
GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     APPLICANT: Haselbeck, Robert
APPLICANT: Ohlsen, Kari L.
APPLICANT: Zyskind, Judith W.
APPLICANT: Wall, Daniel
APPLICANT: Trawick, John D.
APPLICANT: Carr, Carr, Carr, APPLICANT: Yamamoto, Robert T.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ORGANISM: Staphylococcus aureus
US-09-815-242-2037
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     8.73
9.00
100.00%
100.00%
2.01%
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Percent Similarity:
Best Local Similarity:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ; ORGANISM: Human
US-10-027-632-180204
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              US-09-815-242-2037/c
                                                                                                                                                                                                                                                                                                                                                                                                                 SEQ ID NO 180204
LENGTH: 429
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Alignment Scores:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                           TYPE: DNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Query Match:
DB:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ò
```

```
Sequence 280432, Application US/10027632

Sequence 280432, Application US/10027632

GENERAL INFORMATION:
APPLICANT: Wang, David G.

TITLE OF INVENTION: Identification and Mapping of Single Nucleotide
TITLE OF INVENTION: Identification and Mapping of Single Nucleotide
FILE REFERENCE: 100827.129
CURRENT PELING DATE: 2002-04-30
FRIOR PELICATION NUMBER: US 60/128,006
PRIOR APPLICATION NUMBER: US 60/198,676
PRIOR PELING DATE: 2000-04-20
PRIOR FILING DATE: 2000-04-20
PRIOR FILING DATE: 2000-03-29
PRIOR FILING DATE: 2000-03-29
PRIOR FILING DATE: 1999-11-23
PRIOR FILING DATE: 1999-09-28
PRIOR FILING DATE: 1999-09-28
PRIOR FILING DATE: 1999-09-09
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               4 98
0
0
0
                  4 8 8 5
0 0 0
0 0 0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        US-09-701-229-2 (1-448) x US-10-027-632-280432 (1-498)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Length:
Matches:
Conservative:
Mismatches:
Indels:
                                                        Conservative:
Mismatches:
Indels:
                                                                                                                                                           US-09-701-229-2 (1-448) x US-09-815-242-2037 (1-485)
                     Length:
Matches:
                                                                                                                                                                                                   Gaps:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    SOFTWARE: FastSEQ for Windows Version 4.0 SEQ ID NO 280432 LENGTH: 498
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Gaps:
                                                        100.00%
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     100.00%
100.00%
2.01%
                                                                                                2.018
                                                        Percent Similarity:
Best Local Similarity:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Percent Similarity:
Best Local Similarity:
                                                                                                                                                                                                                                                                                                   US-10-027-632-280432
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ; ORGANISM: Human
US-10-027-632-280432
Alignment Scores:
Pred. No.:
                                                                                                  Query Match:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Query Match:
                                          Score:
                                                                                                                                                                                                                                           g
                                                                                                                                                                                                       à
```

ò

Search completed: August 14, 2003, 11:30:57 Job time : 918 secs

```
GenCore version 5.1.6
Copyright (c) 1993 - 2003 Compugen Ltd.
```

OM protein - nucleic search, using frame\_plus\_p2n model

August 14, 2003, 09:10:41; Search time 2291 Seconds Run on:

(without alignments)
4752.687 Million cell updates/sec US-09-701-229-2

448 1 MSLIASDHFRIVVGLGKSGM.....MFKNFEERGRLFAKAVEELA 448 Title: Perfect score: Sequence:

OLIGO Xgapop 60.0 , Xgapext 60.0 Ygapop 60.0 , Ygapext 60.0 Fgapop 6.0 , Fgapext 7.0 Delop 6.0 , Delext 7.0 Scoring table:

22781392 seqs, 12152238056 residues Searched:

Word size:

45546778 Total number of hits satisfying chosen parameters:

Minimum DB seq length: 25 Maximum DB seq length: 200000000

Post-processing: Listing first 45 summaries

Command line parameters:

Database :

em\_gss\_hum:\* em\_estfun:\* em\_esthum:\*
em\_estin:\*
em\_estmu:\*
em\_estov:\* em\_estpl:\*
em\_estro:\*
em\_htc:\* gb\_est3:\*
gb\_est4:\*
gb\_est5:\* gb\_est2:\* gb\_htc:\* em\_estba:\* gb\_est1:\* EST:\*

em\_gss\_inv:\* em\_gss\_pln:\* em\_gss\_vrt:\* em\_gss\_fun:\* em\_gss\_mus:\* em\_gss\_mam:

em\_gss\_rod:\* em\_gss\_phg:\* em\_gss\_pro:\*

em\_gss\_vrl:\* gb\_gssl:\*

29: gb\_gss2:\*

Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

SUMMARIES

	scription	BZ568959 pacs2-164	naca2-1	PM4-HT0	pacs2-1	Triticum	EBro04	3529_1	ICR332	19538 Ri	BB87089	wlln.p	wlm96.p	fb69b08.x	RPCI-23	BE403471 WHE0429_H	EBMA03	LBroot	vg32106.	AU1626	CB671	AU1839/5	AWOL9231 IGGIAIO.X	AU064507	ra14h09.x	BG605535 WHE2239_B	WHEU8ZI-	Tarriit	700 EGI_206_	0 EBEMO4_	14.1 25.7340J.	1975 PIC1 2	0499 945004C	39198 1M0569N	18729 HP09J1	4621 fx69e	00810 wkmlc	59675 fy59f	10292 94605	518126 wlln	426323 60149	605315 WHE23	686112 wlm96.pk	71697 60359703	-
	ID	BZ568959	125754 085554	BE18467	BZ56755	AL81429	BM3708	CB60500	D393	C195	BB87089	CA6228	CA69266	AI544865	AZ06072	BE4034	BI/BIII	96///19	3,5	> :	ַ הַ	<b>~</b> (	2 3	450	A166/240	BG6055	BF20071	BG90764	AW30400	BM3//98	74.001A4	BM32397	BE64049	AZ76919	CB87872	BM53462	CA70081	BM85967	BE51029	CA61812	CB42632	BG6	CA68611	BU37169	
	h DB	45 29	a -	. ~	3	9	-1	-1	-1	1	_	-1	1	6	2	~ .	7.	- ·	(	<i>-</i>	٠,	~ .	<b>~</b> .	0 (	מע	٦,	1	- r	٠.	-i	, ,	4	7	7	3 1	~	7		9 7	7	7	99 10	6	-	
	Leng'	144	11.0	4	92	ä	27	3(	34	3.5	36	36	36	æ	3	e, c	, .	7.	4	4	4	44	4	4.	4	4	4	4 -	* <	7 <	. ic		5.	5	53	53	54	54	Ş	26	26	26	20.	5,	
æ	uer	44.6	. o																	•			٠			٠	٠	٠														•		٠	
	Scor	200	o ⊲	21	11	6	<b>о</b>	6	6	6	6	σ	σ	6	σ,	σ (	מ כ	א ע	ס מ		א כ	מ כ	ס כ	ס ת	<b>D</b> C	ס כ	ס מ	on c	n c	ח מ	n o	n 0	, O	σ	6	თ	σ	б	თ	σι	σ	σ,	σ.	σ	
		 	٦ ٣	4	Ŋ	9	7	œ	σ	10	11	12	13	14	12	91	\ T	ρ c	5	0.5	77	77	57	47	0 0	9 1	70	20 0	) c	3 5	4.6	3 6	34	35	36	37	38	39	40	41			44		
	Resu	. 0	د		ņ	υ	O	ပ	ပ	υ	υ	υ	ပ	Ö	υ	ပ	o i	יט	U	o i	o i	0	U I	יט	U	o i	U ·	U (	י כ	ပ	ر	. 0	Ö		υ		O	υ	ບ	O		O	ပ	υ	

ALIGNMENTS

RESULT 1 B2568959/c

B2568959 11-DEC-2002 pacs2-164\_8171.y2 pacs2-164 Pseudomonas aeruginosa genomic clone pacs2-164\_8171, genomic survey sequence. Pseudomonas aeruginosa Bacteria; Proteobacteria; Gammaproteobacteria; Pseudomonadales; Pseudomonadaceee; Pseudomonas. BZ568959 BZ568959.1 GI:27202799 Pseudomonas aeruginosa GSS. LOCUS ORGANISM ACCESSION VERSION KEYWORDS SOURCE

(bases 1 to 1445)

REFERENCE

~

```
173
                                                                                                                                                                                                                                                                                                                                      Alignment Scores:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                582
                        RESULT 2
BZ579116/c
                                        LOCUS
DEFINITION
                                                                                                                                                                                                                                                                                                                                             ..
No..
                                                                                                                                                                                                                                                                                                             BASE COUNT
ORIGIN
                                                               ACCESSION
VERSION
KEYWORDS
SOURCE
                                                                                              ORGANISM
                                                                                                                                                           JOURNAL
                                                                                                                     REFERENCE
AUTHORS
                                                                                                                                                                                                                                 FEATURES
                                                                                                                                             TITLE
                                                                                                                                                                                                                                                                                                                                                                                                                  ð
                                                                                                                                                                                                                                                                                                                                                                                                                                셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                 ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                               a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ö
                                                                                                                                                                                                                                                                                                      616
                                                                                                                                                                                                                                                                                                                     186
                                                                                                                                                                                                                                                                                                                                    556
                                                                                                                                                                                                                                                                                                                                                    206
                                                                                                                                                                                                                                                                                                                                                                   496
                                                                                                                                                                                                                                                                                                                                                                                   226
                                                                                                                                                                                                                                                                                                                                                                                                  436
                                                                                                                                                                                                                                                                                                                                                                                                                  246
                                                                                                                                                                                                                                                                                                                                                                                                                                 376
                                                                                                                                                                                                                                                                                                                                                                                                                                                 266
                                                                                                                                                                                                                                                                                                                                                                                                                                                                316
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                286
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                256
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                306
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               196
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              326
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      AlaThrAsnValGlyAlaAlaLeuAlaAlaIleGluGlyLeuGlyAlaAspIleAspGly 346
Spencer, D.H., Raymond, C.K., Smith, E.E., Sims, E.E., Hastings, M., Burns, J.L., Kaul, R. and Olsen, M.V.
Whole-Genome-Sequence variation among multiple isolates of Psedomonae-Inginosa library
J. Bacteriol., (2002) In press
Contact: Chris K. Raymond
                                                                                                                                                                                                                                                                                    ArgGlyalaArgGlnValValValaBrargAlaAspAlaLeuThrArgFroLeuIleAla
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        GAACTGAAGATCCGTGGCGCCCACAACTATTCCAACGCGCTCGCCCGCGTGGCG
                                                                                                                                                                                                                                                                                                                                                                                                CGCGGTGCCCGCCAGGTCGTGATCGCGCCGATGCCCTGACCCGACCGCTGATCGCC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                               GluLeuLysIleArgGlyAlaHisAsnTyrSerAsnAlaLeuAlaLeuAlaLeuGly
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             AlaHisArgCysGlnTrpValArgGluArgGlnGlyValSerTyrTyrAspAspSerLys
                                                                                                           others
                                                                                                                                                                                                                1445
200
0
                                                                                                                                                                                  8
                                                                                                                                                                                                                Length:
Matches:
Conservative:
Mismatches:
Indels:
                                             Genome Center
University of Washington
Box 352145, Seattle, WA 98105-2145, USA
Fax: 206221654
Email: craymond@u.washington.edu
Class: shotgun.
                                                                                                                                                                                  293
                                                                                                                                                                                                                                                         Gaps:
                                                                                                                                                                                                                                                                      (1-1445)
                                                                                                     Location/Qualifiers
                                                                                                                                                                                 412 g
                                                                                                                                                                                                                                                                      US-09-701-229-2 (1-448) x BZ568959
                                                                                                                                                                                                                2,63e-179
200.00
100:00%
100.00%
44.64%
                                                                                                                                                                                  424 C
                                                                                                                                                                           library.
                                                                                                                                                                                                                              Percent Similarity:
Best Local Similarity:
                                                                                                                                                                                308
                                                                                                                                                                                                         Alignment Scores:
                                                                                                                                                                                                                                                                                                                                                                 555
                                                                                                                                                                                                                                                                                                                                                                                                                                                247
                                                                                                                                                                                                                                                                                                                                                                                                                                                              375
                                                                                                                                                                                                                                                                                                                                                                                                495
                                                                                                                                                                                                                                                                                                                                                                                                                                                                              267
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              315
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            327
                                                                                                                                                                                                                                                                                                                                                  187
                                                                                                                                                                                                                                                                                                                                                                                207
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              287
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             255
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             307
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            195
                                                                                                                                                                                                                                              Query Match:
DB:
                                                                                                                                                                                                                 ..
9
                                                                                                                                                                                 BASE COUNT
AUTHORS
                                JOURNAL
                                                                                                     FEATURES
                TITLE
                                       COMMENT
                                                                                                                                                                                          ORIGIN
                                                                                                                                                                                                                                                                                      ò
                                                                                                                                                                                                                                                                                                   g
                                                                                                                                                                                                                                                                                                                   ò
                                                                                                                                                                                                                                                                                                                                 g
                                                                                                                                                                                                                                                                                                                                                  ò
                                                                                                                                                                                                                                                                                                                                                              g
                                                                                                                                                                                                                                                                                                                                                                                ç, g
                                                                                                                                                                                                                                                                                                                                                                                                               à
                                                                                                                                                                                                                                                                                                                                                                                                                             g
                                                                                                                                                                                                                                                                                                                                                                                                                                               ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                             g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ŏ
```

```
892 bp DNA linear GSS 17-DEC-2002 msh Pseudomonas aeruginosa genomic clone msh2_6205,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    463
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            403
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       190
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  343
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      583
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              523
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              191 ArgTyrAspGlyMetAlaAspTyrHisLeuAlaLySHisArgIlePheArgGlyAlaArg 210
           16
                                                                                                                                                              Pseudomonas aeruginosa
Bacteria; Proteobacteria; Gammaproteobacteria; Pseudomonadales;
Pseudomonadaceae; Pseudomonas.
1 (bases 1 to 892)
Spencer, D.H., Raymond, C.K., Smith, E.E., Sims, E.E., Hastings, M.,
Burns, J.L., Kaul, R. and Olsen, M.V.
Whole-Genome-Sequence variation among multiple isolates of
Psedomonas aeruginosa library
J. Bacteriol., (2002) In press
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               135 GCCACCAACGTCGCCCCCCCCTGCCGCGCATCGAGGGCTGGGTGCCGACCATCGACGGG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         111 IlevalalariethrGlySerAsnalaLysSerThrvalThrThrLeuValGlyGluMet
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ATC6TC6CCATCACC6GTTCCAAC6CGAAGAGCACCGTGACCACCCTGGTGGGCGAAATG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       171 CysAspArgLeuAsnAlaGluValAlaThrValLeuAsnValSerGluAspHisMetAsp
                                                                                                                                                                                                                                                                                                                                                                                                                others
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  897
000
000
000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Length:
Matches:
Conservative:
Mismatches:
Indels:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ų
                                                                                                                                                                                                                                                                                                      Genome Center
University of Washington
Box 352145, Seattle, WA 98105-2145,
Tal: 206216954
Fax: 2066857244
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             160
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Gaps:
                                                                                                                                                                                                                                                                                                                                                                            Email: craymond@u.washington.edu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  US-09-701-229-2 (1-448) x BZ579116 (1-892)
                                                                                                                                                                                                                                                                                                                                                                                                      Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ρ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            276
                                                                 BZ579116
msh2_6205.y2 msh Pseudomon
genomic survey sequence.
BZ579116
BZ579116.1 GI:27214177
                                                                                                                                                      Pseudomonas aeruginosa
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  3.16e-166
186.00
100.00%
100.00%
41.52%
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               O
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  11brary.
277
                                                                                                                                                                                                                                                                                                                                                                                            Class: shotgun.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Percent Similarity:
Best Local Similarity:
Query Match:
DB:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Ø
```

us-09-701-229-2.olip2n.rst

g

8 à

å

g ò g

ð

```
Fax: +55-11-2704922
Fax: +55-11-2707001
Email: asimpson@ludwig.org.br
This sequence was derived from the FAPESP/LICR Human Cancer Genome
Project. This entry can be seen in the following URL
(http://www.ludwig.org.br/scripts/gethtmi2.pl?tl=&t2=PM4-HT0688-050
Seq primer: puc 18 forward
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  /dev_stage="Adult"

/clone_lib="HT0688"
/note="Organ: head_neck; Vector: pucl8; Site_1: Smal;
Site_2: Smal; A mini-library was made by cloning products
derived from ORESTES PCR (U.S. Letters Patent application
No. 196, 716 - Ludwing Institute for Cancer Research)
profiles into the pUC 18 vector. Reverse transcription of
tissue mRNA and cDNA amplification were performed under
                                                                                                                                                                                                                     BE184674 452 bp mRNA linear EST 22-JUN-2000 PM4-HT0688-050500-002-d10 HT0688 Homo sapiens CDNA, mRNA sequence. BE184674
                                                                                                                                                                                                                                                                                                                                      Eukaryotz, Metazoa; Chordata; Craniata; Vertebrata; Euteleostoml; Mammalia; Eutheria; Primates; Catarrhini; Hominidae; Homo.

1 (bases 1 to 452)

1 bolass Neto, E., Garcia Correa, R., Verjovski-Almeida, S., Briones, M.R., Nagai, M.A., da Silva, W. Jr., Zago, M.A., Bordin, S., Costa, F.F., Goldman, G.H., Cavalho, A.F., Matsukuma, A., Bala, G.S., Simpson, D.H., Brunstein, A., deoliveira, P.S., Bucher, P., Jongeneel, C.V., O'Hare Simpson, A.J., Soares, F., Brentani, R.R., Reis, L.F., de Souza, S.J. and Simpson, A.J.
                   269
                                                  Contact: Simpson A.J.G.
Laboratory of Cancer Genetics
Ludwig Institute for Cancer Research
Rua Prof. Antonio Prudente 109, 4 andar, 01509-010, Sao Paulo-SP,
sequence tags
Proc. Natl. Acad. Sci. U.S.A. 97 (7), 3491-3496 (2000)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        452
21
0
0
0
0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Conservative:
Mismatches:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       low stringency conditions."
140 c 133 g 88 t
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Matches:
                                                                                                                                     Length:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Indels:
                                                                                                                   369 aArgPheCysArgAlaValLeuLeu 378
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   1. .452
/organism="Homo sapiens"
/mol_type="mRNA"
/db_xref="taxon:9606"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              High quality sequence start: 26
High quality sequence stop: 89.
Location/Qualifiers
                                                                                                                                                                                                                                                                       GI:8663858
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      1.25e-09
21.00
100.00%
100.00%
4.69%
                                                                                                                                                                                                                                                                                                          Homo sapiens (human)
                                                                                                                                                                                                                                                                                                                           Homo sapiens
                                                                                                                                                                                                                                                                       BE184674.1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Percent Similarity:
Best Local Similarity:
Query Match:
DB:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            20202663
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       16
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Brazil
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Scores:
                                                                                                                                                     329
                                                                                                                                                                                                                                     DEFINITION
ACCESSION
VERSION
KEYWORDS
SOURCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      source
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Pred. No.:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       BASE COUNT
                                                                                                                                                                                                                                                                                                                         ORGANISM
                                                                                                                                                                                                                                                                                                                                                                         REFERENCE
AUTHORS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              MEDLINE
PUBMED
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Alignment
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              JOURNAL
                                                                                                                                                                                      RESULT 4
BE184674
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   FEATURES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              TITLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ORIGIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Score:
                                                                                                                                                                                                                       LOCUS
                                                                                                                                                     ద
                                                    δ
                                                                                g
                                                                                                                   ò
                                                                                                                                                                                                                                                                                                                        pacs2-164_1863.x1 pacs2-164 Pseudomonas aeruginosa genomic clone pacs2-164_1863, genomic survey sequence.
BZ559806.1 GI:27176698
GSS.
                                               CysTrpSerPheGlyLeuAsnLysProAspPheLysAlaPheGlyLeuIleGluGluAsp 250
                                                                                                                                     330 ValGlyAlaAlaLeuAlaAlaIleGluGlyLeuGlyAlaAspIleAspGlyLysLeuVal 349
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Bacteria; Proteobacteria; Gammaproteobacteria; Pseudomonadales;
Pseudomonadaceae; Pseudomonas.
1 (bases 1 to 1171)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Spencer, D.H., Raymond, C.K., Smith, E.E., Sims, E.E., Hastings, M. Burns, J.L., Kaul, R. and Olsen, M.V.

Burns, J.L., Kaul, R. and Olsen, M.V.

Whole-cenome-Sequence variation among multiple isolates of Psedomonas aeruginosa library
J. Bacteriol., (2002) In press
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             /clone="pacs2-164_1863"
/clone_lib="pacs2-164"
/note="clinical isolate 2-164 Whole genomic shotgun
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   1 others
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  1171
68
0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  aeruginosa"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Conservative:
Mismatches:
Indels:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Genome Center
University of Washington
Box 352145, Seattle, WA 98105-2145, USA
Tel: 2062857244
Email: craymond@u.washington.edu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ų
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Length:
Matches:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   298
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              /organism="Pseudomonas at /mol_type="genomic DNA" /strain="2-164"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Gaps:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        (1-1171)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 /db_xref="taxon:287"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ь
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   329
                                                                                                                                                                                                                                                     271 ArgGlyAlaHisAsnTyr 276
                                                                                                                                                                                                                                                                       US-09-701-229-2 (1-448) x BZ559806
                                                                                                                                                                                                                                                                                                                                                                                                                                                          Pseudomonas aeruginosa
Pseudomonas aeruginosa
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  3.47e-28
41.00
97.14%
97.14%
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  library."
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Class: shotgun.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Percent Similarity:
Best Local Similarity:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Alignment Scores:
                 342
                                                                                  282
                                                                                                                  231
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Query Match:
DB:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  BASE COUNT
ORIGIN
                                                                                                                                                                                                                                                                                                                                                                         DEFINITION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Pred. No.:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ORGANISM
                                                                                                                                                                                                                                                                                                                                                                                                        ACCESSION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            REFERENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            AUTHORS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           JOURNAL
                                                                                                                                                                                                                                                                                                                                                                                                                        VERSION
KEYWORDS
SOURCE
                                                                                                                                                                                                                                                                                                                        RESULT 3
BZ559806
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                FEATURES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            TITLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              COMMENT
                                                                                                                                                                                                                                                                                                                                                         LOCUS
```

ð 셤 ò

8 à 용

ö

```
Triticum aestivum (mercia) clone El2_e512_plate_7 endosperm and embryo) 8 days post anthesis
02-SEP-2002 (Rel. 72, Last updated, Version 2)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           US-09-701-229-2 (1-448) x AL814293 (1-199)
                                                                                                                                                                                                                                                                                           Location/Qualiflers
                                                                           Triticum aestivum (bread wheat)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              BM370877
BM370877.2 GI:21949180
                                                       EST; expressed sequence tag.
                                                                                                                                                                                                                                                                                                                                                                                                                                                              129
9.00
100.00%
100.00%
2.01%
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Percent Similarity:
Best Local Similarity:
Query Match:
                     Triticum aestivum
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    sednence.
                                                                                                                                                                                                                                                                                                                                                                                                                              Sequence 199
                                                                                                                                                                                                                                                                                                                                                                                                                                                     Alignment Scores:
                                                                                                                                                                                                                        Barker G.;
                                                                                                                                                                                                                                                                                                                   source
                                                                                                                                                                                                              1-199
                                                                                                                                                                                                                                                                                                                                                                                                                                                                ..
⊗
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             RESULT 7
BM370877/c
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   LOCUS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ACCESSION
VERSION
KEYWORDS
SOURCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ORGANISM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     REFERENCE
AUTHORS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      TITLE
JOURNAL
                                                                                                                                                                                                                                                                                            Key
                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Score:
ŏ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        윱
                                                                                                                                pacs2-164_7094.y2 pacs2-164 Pseudomonas aeruginosa genomic clone pacs2-164_7094, genomic survey sequence.
                             Pseudomonas aeruginosa
Bacteria; Proteobacteria; Gammaproteobacteria; Pseudomonadales;
Pseudomonadaceae, Pseudomonas.
                                                                                                                                                                                                                                                      1 (bases 1 to 928)
Spencer, D.H., Raymond, C.K., Smith, E.E., Sims, E.E., Hastings, M.,
Burns, J.L., Kaul, R. and Olsen, M.V.
Whole-Genome-Sequence variation among multiple isolates of
Psedomonas aeruginosa library
J. Bacteriol., (2002) In press
                                                                                                                                                                                                                                                                                                                                                                                                                                    /organism="Pseudomonas aeruginosa"
/mol_type="genomic DNA"
/strain="2-164"
/db_xref="texnon:287"
/clone_ip=cs2-164"
/clone_lib="pacs2-164"
/note="clinical isolate 2-164 Whole genomic shotgun
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           928
111
0
0
0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Conservative:
Mismatches:
Indels:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Genome Center
University of Washington
Box 352145, Seattle, WA 98105-2145, USA
Tel: 2062216954
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Length:
Matches:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                226
                                                                                                                                                                                                                                                                                                                                                                              Fax: 2066857244
Email: craymond@u.washington.edu
Class: shotgun.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Gaps:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                BP
       US-09-701-229-2 (1-448) x BE184674 (1-452)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      US-09-701-229-2 (1-448) x BZ567557 (1-928)
                                                                                                                                                                                                                                                                                                                                                                                                                   Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               236 9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               standard; RNA; EST; 199
                                                                                                                                                                                     BZ567557.1 GI:27199005
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             05-JUL-2002 (Rel. 72, Created)
                                                                                                                                                                                                             Pseudomonas aeruginosa
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          9.12
11.00
100.00%
100.00%
2.46%
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    11brary."
228 c
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Percent Similarity:
Best Local Similarity:
Query Match:
                                                                                      111
301 CTC 303
                                                                        297 Leu 297
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Alignment Scores:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         AL814293.1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             AL814293
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   AL814293;
                                                                                                                    RESULT 5
BZ567557/C
                                                                                                                                                                        ACCESSION
VERSION
KEYWORDS
SOURCE
ORGANISM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             BASE COUNT
ORIGIN
                                                                                                                                                    DEFINITION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Pred. No.:
                                                                                                                                                                                                                                                                                                             JOURNAL
COMMENT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   AL814293/c
                                                                                                                                                                                                                                                        REFERENCE
                                                                                                                                                                                                                                                                   AUTHORS
                                                                                                                                                                                                                                                                                                                                                                                                                   FEATURES
                                                                                                                                                                                                                                                                                         TITLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         RESULT
                                                                                                                                           COCUS
```

ò g XX XX DIX SV

```
/cultivar="mercia" //cultivar="mercia" //cultivar="mercia" //cultivar="mercia" //cultivar="8 days post anthesis" //tissue_type="maternal tissue (minus endosperm and embryo)" //clone_lib="e:512" //clone="E12_e512_plate_7"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Submitted (03-JUL-2002) to the EMBL/GenBank/DDBJ databases.
Barker G., Institute of Arable Crop Research, Long Ashton, Bristol BS41 9AF
United Kingdom.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Hordeum vulgare subsp. vulgare
Hordeum vulgare subsp. vulgare
Hordeum vulgare subsp. vulgare
Eukaryota; Viidiplantae; Streptophyta; Embryophyta; Tracheophyta;
Spermatophyta; Magnoliophyta; Liliopsida; Poales; Poaceae; Pooideae
; Triticeae; Hordeum.
1 (bases 1 to 279)
Hedley,P., Liu,H., Caldwell,D., McCallum,N., Mudie,S., Cardle,L.,
Ramsay,L., Machray,G., Marshall,D.F.M. and Waugh,R.
Development of Barley Transcriptome Resources
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 BM370877 21-JUL-2002 EBro04_SQ002_K07_R root, 3 week, salt-stressed, cv Optic, EBro04 Hordeum vulgare subsp. vulgare cDNA clone EBro04_SQ002_K07 5', mRNA
                                                                                                                                                                                                                                                                                            [1]
Wilson I., Beswick R., Shepherd S., Barker G., Parker J., Owen P.,
Edwards D., Coghill J., Holdsworth M., Lenton J., Shewry P., Edwards K.;
"A BBSRC-funded wheat EST resource for the academic community";
Unpublished.
maternal tissue (minus
                                                                                                                                                                           Eukaryota; Viridiplantae; Streptophyta; Embryophyta; Tracheophyta;
Spermatophyta; Magnollophyta; Liliopsida; Poales; Poaceae; Pooldeae;
Triticeae; Triticum.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           199
0
0
0
0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       BP; 48 A; 56 C; 73 G; 22 T; 0 other;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Length:
Matches:
Conservative:
Mismatches:
Indels:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          /db_xref="taxon:4565"
/mol_type="mRNA"
/organism="Triticum aestivum"
```

```
D39320 349 bp mRNA linear EST 03-APR-2002 RICR3327A Rice root Oryza sativa (japonica cultivar-group) cDNA,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Oryza sativa (japonica cultivar-group)
Oryza sativa (japonica cultivar-group)
Oryza sativa (japonica cultivar-group)
Eukaryota; Viridiplantae; Streptophyta; Embryophyta; Tracheophyta; Spermatophyta; Magnoliophyta; Liliopsida; Poales; Poaceae;
Brhartoideae; Oryzae; Oryza.
1 (bases I to 349)
Sasaki,T., Miyao,A. and Yamamoto,K.
Rice cDNA from callus 1995
                        /db_xref="taxon:4577"
/tissue_type="ar"
/dev_stage="2 mm"
/dabost="E. coli XLOLR"
/clone_lib="3529 - 2 mm ear tissue from Schmidt and Hake labs"
                                                                                                                                               /note="Organ: ear; Vector: PAD-GAL4-2.1; Site_1: EcoR1; Site_2: XhoI; RNA isolated by Hake lab. 1 million pfu amplified. Ampicillin is the selection marker." 88 c 113 g 36 t
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Confect: Takuji Sasaki
Contect: Takuji Sasaki
National Institute of Agrobiological Resources
Rice Genome Research Program, Kannondai 2-1-2, Tsukuba, Ibaraki
305-8602, Japan
Tel: 81-298-38-7441
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Fax: 81-298-38-7468
Email: tsasaki@abr.affrc.go.jp, URL:http://rgp.dna.affrc.go.jp/
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1. .349
/organism="Oryza sativa (japonica cultivar-group)"
/organism="Oryza sativa (japonica cultivar-group)"
/mol_type="mRNA"
/cultivar="Nipponbare"
/db_xref="taxon:39947"
/clone_lib="Rice root"
/note="Prepared from seedling root."
/note="Prepared from seedling root."
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            w 600000
                                                                                                                                                                                                                                                                         60
60
60
60
60
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Length:
Matches:
Conservative:
Mismatches:
                                                                                                                                                                                                                                                                         Length:
Matches:
Conservative:
Mismatches:
Indels:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Indels:
Gaps:
                                                                                                                                                                                                                                                                                                                                                                                                                                    US-09-701-229-2 (1-448) x CB605003 (1-309)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                rgr..
Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        US-09-701-229-2 (1-448) x D39320 (1-349)
       /mol_type="mRNA"
/cultivar="B73"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            243
9.00
100.00%
100.00%
2.01%
                                                                                                                                                                                                                                                                                                         100.00%
100.00%
2.01%
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                D39320 D39320.1 GI:568471
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 mRNA sequence.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         PROJECT - 'RGP'
                                                                                                                                                                                                                                                                                                         Percent Similarity:
Best Local Similarity:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Best Local Similarity:
                                                                                                                                                                                                      72
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Percent Similarity:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Alignment Scores:
                                                                                                                                                                                                                                                         Alignment Scores:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Query Match:
DB:
                                                                                                                                                                                                                                                                                                                                              Query Match:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 KEYWORDS
SOURCE
ORGANISM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     BASE COUNT
ORIGIN
                                                                                                                                                                                                                                                                             Pred. No.:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              DEFINITION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Pred. No.:
                                                                                                                                                                                                     BASE COUNT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ACCESSION
VERSION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            AUTHORS
TITLE
JOURNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          RESULT 9
D39320/c
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           REFERENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             FEATURES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                COMMENT
                                                                                                                                                                                                                         ORIGIN
                                                                                                                                                                                                                                                                                              Score:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                         g
                                                                                                                                                                                                                                                                                                                                                                                                                                       ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             3529_1_64_1_E07.y_1 3529 - 2 mm ear tissue from Schmidt and Hake labs Zea mays cDNA, mRNA sequence.
CB605003.1 GI:29544623
EST.
                                                                                                                                                                                                                                                                                                                                                         /clone_lib="root, 3 week, salt-stressed, cv Optic, EBro04"
/note="Vector: pSPORT1; Site_1: Sal I; Site_2: Not I;
Non-normalised library, directionally cloned into pSPORT1.
Perived from roots of 3 week old salt stressed barley
plants. Developed as part of the barley transcriptome
resources of BBSRC/SEERAD funded cereal IGF (Investigating
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Spermatophyta; Tracheophyta; Embryophyta; Tracheophyta; Spermatophyta; Magnoliophyta; Liliopsida; Poales; Poaceae; PACCAD clade; Panicoideae; Andropogoneae; Zea. 1 (bases 1 to 309)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Maize ESTs from various cDNA libraries sequenced at Stanford
On Jan 10, 2002 this sequence version replaced gi:18114267. Contact: Waugh R. Marshall DF Genome Dynamics/Computational Biology Scottish Crop Research Institute Invergowrie, Dundee, DD2 5DA, Scotland, UK Fax: 00 44 1382 562731 Fax: 00 44 1382 562731 Samil: est@scri.sari.ac.uk All sequence has a Phred quality score of 20 or over Seq primer: Ml3 reverse.
                                                                                                                                                                                                 1. .279
/organism="Hordeum vulgare subsp. vulgare"
/mol_type="manka".
/db_xref="taxon:112509"
/clone="EBro04_S0002_K07"
/tissue_type="root"
/dev_stage="a week"
/lab_host="DH10B"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            0000
0000
0000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          855 California Ave, Palo Alto, CA 94304, USA
Tel: 650 723 2227
Fax: 650 725 8221
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Matches:
Conservative:
Mismatches:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Length:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Indels:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Department of Biological Sciences Stanford University
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       397 ArgValAlaThrLeuAspGluAlaVal 405
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Gaps:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Gene Function) project.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         6 CGCGTCGCAACCCTTGACGAAGCAGTC 40
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   US-09-701-229-2 (1-448) x BM370877 (1-279)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Email: walbot@stanford.edu
Plate: 3529_1_64_1 row: E c
Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        /organism≂"Zea mays'
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              100.00%
100.00%
2.01%
12
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  University
Unpublished
Contact: Walbot V
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Percent Similarity:
Best Local Similarity:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Zea mays
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Walbot, V.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        48
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Alignment Scores:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Query Match:
DB:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            RESULT 8
CB605003/c
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               LOCUS
DEFINITION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ACCESSION
VERSION
KEYWORDS
SOURCE
ORGANISM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      BASE COUNT
ORIGIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Pred. No.:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             AUTHORS
TITLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              REFERENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   JOURNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     FEATURES
                                                                                                                                                                                  FEATURES
       COMMENT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      COMMENT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ŏ
```

```
Laboratory for Genome Exploration Research Group, RIKEN Genomic Laboratory for Genome Exploration Research Group, RIKEN Genomic Sciences Center(GSC), Yokohama Institute
The Institute of Physical and Chemical Research (RIKEN)
1.7-22 Suehiro-cho, Tsurumi-ku, Yokohama, Kanagawa 230-0045, Japan Tel: 81-45-503-9216
Email: genome-resegscriken.go.jp,
URL: http://genome-gsc.riken.go.jp,
Carlinci, P., Shibata'r, Hayateu, N., Sugahara, Y., Shibata, K., Itoh
M., Konno, H., Okazaki, Y., Muramatsu, M. and Hayashizaki, Y.
Normalization and subtraction of cap-trapper-selected cDNAs to prepare full-length CDNA libraries for rapid discovery of new genes. Genome Res. . 10 (10), 1617-1630 (2000)
wagi.K., Fujiwake, S., Inoue, K., Togawa Y., Izawa, M., Ohara, E., Watahiki, M., Yoneda, Y., Ishikawa, T., Ozawa, K., Tanaka, T., Matsuura S., Kawai, J., Okazaki, Y., Muramatsu, M., Inoue, Y., Kira, A. and Hayashizaki, Y.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Hayatsu,N., Hiramoto,K., Hiraoka,T., Hirozane,T., Imotani,K., Ishii,
'Y., Ito,M., Rawai,J., Kojima,Y., Konno,H., Kouda,M., Matsuyama,T.,
Nakamura,M., Nishi,K., Nomura,K., Numasaki,R., Okazaki,Y., Okido,T.,
Saito,R., Sakai,C., Sakai,K., Sakazume,N., Sasaki,D., Sato,K.,
Shibata,K., Shinagawa,A., Shiraki,T., Sogabe,Y., Suzuki,H., Tagawa,A., Takahashi,F., Takaku-Akhira,S., Tanaka,T., Tomaru,A., Toya,T.,
Watchiki,A., Yasunishi,A., Muramatsu,M. and Hayashizaki,Y.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    CA622878 366 bp mRNA linear EST 23-NOV-2002 wlln.pk0102.f2 wlln Triticum aestivum cDNA clone wlln.pk0102.f2 5' end, mRNA sequence.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        /tissue_type="ovary and uterus"
/dev_stage="10 days pregnant adult"
/clone_lib="RIKEN full-length enriched, 10 days pregnant
adult female ovary and uterus"
112 c 85 g 67 t
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Length:
Matches:
Conservative:
Mismatches:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Indels:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             /mol_type="mesculus"
/strain="C57BL/6J"
/db_xref="taxon:10090"
/clone="G63005M20"
/sex="female"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          /organism-"Mus musculus"
                                                                                                                                                                                       Unpublished
Contact: Yoshihide Hayashizaki
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      US-09-701-229-2 (1-448) x BB870897 (1-360)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Location/Qualiflers
1. .360
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 100.00%
100.00%
2.01%
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         e mouse tissues.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             252
9.00
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Percent Similarity:
Best Local Similarity:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Alignment Scores:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Query Match:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              RESULT 12
CA622878/c
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         LOCUS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Pred. No.:
                                                                                                                                                                                       JOURNAL
COMMENT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          BASE COUNT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              FEATURES
                                                                                                                                                 TITLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ORIGIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ð
                                                                                                                                                 EST 03-APR-2002
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             EST 27-NOV-2001
                                                                                                                                                                                                                                                                                          Oryża sativa (japonica cultivar-group)
Eukaryota: Viridiplantae; Streptophyta; Embryophyta; Tracheophyta;
Spermatophyta; Magnoliophyta; Liliopsida; Poales; Poaceae;
Ehrhartoideae; Oryzeae; Oryza,
1 (bases 1 to 359)
Sasaki, T.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                /clone_lib-"Rice panicle at ripening stage"
/note-"Organ: panicle; Rice CDNA from panicle at ripening
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       BB870897 RIKEN full-length enriched, 10 days pregnant adult female ovary and uterus Mus musculus cDNA clone G630025M20 5', mRNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Rodentia; Sciurognathi; Muridae; Murinae; Mus. 1 (bases 1 to 360)
Akimura,T., Arakawa,T., Carninci,P., Furuno,M., Hanagaki,T.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                    Confact: Takuji Sasaki
National Institute of Agrobiological Resources
National Institute of Agrobiological Resources
Sice Genome Research Program, Kannondai 2-1-2, Tsukuba, Ibaraki
305-8602, Japan
Tel: 81-298-38-7441
Fax: 81-298-38-7468
Email: tasasaki@abr.affrc.go.jp, URL:http://rgp.dna.affrc.go.jp/
PROJECT = 'RGP'.
                                                                                                                                           C19538 359 bp mRNA linear EST 03-AF C19538 Rice panicle at ripening stage Oryza sativa (Japonica cultivar-group) cDNA clone E10575_lA, mRNA sequence.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             /organism="Oryza sativa (japonica cultivar-group)"
/mol_type="mRNA"
cultivar="Nipponbare"
/db_xref="taxon.39947"
/clone="E10575_1A"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   11 others
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  359
0000
0000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Conservative:
Mismatches:
Indels:
                                                                                                                                                                                                                                                                                                                                                                                                               Rice cDNA from panicle at ripening stage Unpublished
                                                                                                                                                                                                                                                                       Oryza sativa (japonica cultivar-group)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   50 t
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    /dev_stage="ripening stage"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Length:
Matches:
                 348 LeuValLeuLeuAlaGlyGlyAspGly 356
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              119 g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         US-09-701-229-2 (1-448) x C19538 (1-359)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Mus musculus (house mouse)
Mus musculus
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              BB870897.1 GI:17117107
                                                                                                                                                                                                                              C19538.1 GI:1631809
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      100.00%
100.00%
2.01%
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              107 c
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                251
9.00
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               stage
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Percent Similarity:
Best Local Similarity:
Query Match:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       sequence.
BB870897
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Alignment Scores:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   EST.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                source
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              RESULT 11
BB870897/c
                                                                                                                                                                                                    ACCESSION
VERSION
KEYWORDS
SOURCE
ORGANISM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       LOCUS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                М
..
                                                                                                                                                              DEFINITION
                                                                                                                                                                                                                                                                                                                                                                       REFERENCE
AUTHORS
TITLE
                                                                                                                                                                                                                                                                                                                                                                                                                                   JOURNAL
COMMENT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 COUNT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ORGANISM
                                                                                                    RESULT 10
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ACCESSION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              VERSION
KEYWORDS
SOURCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             AUTHORS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        REFERENCE
                                                                                                                       C19538/c
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         FEATURES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              BASE CO
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Score:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ç
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          g
```

0 % & 0 0.0 0

us-09-701-229-2.olip2n.rst

```
Clark,M., Johnson,S.L., Lehrach,H., Lee,R., Li,F., Marra,M., Eddy, S.S., Hillier,L., Kucaba,T., Marthin,J., Beck,C., Wyller,T., Underwood, K., Steptoe,M., Theising,B., Allen,M., Bowers,Y., Wyler,T., Underwood, K., Steptoe,M., Theising,B., Allen,M., Bowers,Y., Person,B., Swaller,T., Gibbons,M., Pape,D., Harvey,N., Schurk,R., Ritter,E., Kohn,S., Shin,T., Jackson,Y., Cardenas,M., McCann,R., Waterston,R. and Wilson,R., Shin,T., Jackson,Y., Cardenas,M., McCann,R., Waterston,R. Washin Zebrafish EST Project 1998

AL Unpublished
Contact: Stephen L. Johnson of Medicine
Mashington University School of Medicine
Fax: 314 286 1800
Fax: 314 286 1800
Fax: 314 286 1800
Fax: 314 286 1810
F
                                                                                                            1. .366
/organism="Triticum aestivum"
/mol_type="mkNa"
/mol_type="mkNa"
/cultivar="Stephens"
/db_xref="taxon:4565"
/clone="wing6.pk060.b5"
/tissue_type="leaf"
/clone_lib="wing6"
/clone
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            A1544865 380 bp mRNA linear EST 07-JUN-2001 fb69b08.x1 Zebrafish WashU MPIMG EST Danio rerio cDNA clone IMAGE:3717111 3', mRNA sequence. A1544865.1 GI:4462238
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Actinopterygii; Neopterygii; Teleostei; Ostariophysi; Cyprinides; Pryprinides; Danios; Cyprinides; Danios; Lo 380).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Conservative:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Mismatches:
    Email: Scott.V.Tingey@USA.dupont.com
Seg primer: M13.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Length:
Matches:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Indels:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              /organism="Danio rerio"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Seq primer: 17 ET from Amersham
High quality sequence stop: 333
POLIA-No.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    US-09-701-229-2 (1-448) x CA692665 (1-366)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Location/Qualifiers
                                                                                  Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Danio rerio (zebrafish)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     100.00%
100.00%
2.01%
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           256
9.00
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Danio rerio
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Percent Similarity:
Best Local Similarity:
Query Match:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Alignment Scores:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           source
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     VERSION
KEYWORDS
SOURCE
ORGANISM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       BASE COUNT
ORIGIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     LOCUS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Pred. No.:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  AI544865/c
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                TITLE
JOURNAL
COMMENT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  REFERENCE
AUTHORS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ACCESSION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       RESULT 14
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           FEATURES
                                                                                          FEATURES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Score:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    .
G
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           wlm96.pk060.b5 wlm96 Triticum aestivum cDNA linear EST 25-NOV-2002 wlm96.pk060.b5 wlm96 Triticum aestivum cDNA clone wlm96.pk060.b5 5' end, mRNA sequence. CA692665 EST 25-14444 EST.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                /mol_type="mRNA"
/db_xref="taxon:4565"
/clone="wlln.pk0i02.f2"
/tissue_type="leaf"
/clone_lib="wlln"
/note="Vector: pBluescript SK+; Site_1: EcoRI; Site_2:
/note="Vector: pBluescript SK+; Site_1: EcoRI; Site_2: 
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Triticum aestivum (bread wheat)
Triticum aestivum
Triticum asstivum
Eukaryota, Viridiplantae; Streptophyta; Embryophyta; Tracheophyta;
Bermatophyta; Magnollophyta; Liliopsida; Poales; Poaceae; Pooideae; Triticeae; Triticum.
1 (bases I to 366)
1 (bases I to 366)
Tringey,S.V., Powell,W., Wolters,P., Dolan,M., Hainey,C., Yuan,Z., Miao,G., Caraher,N. and Hanafey,M.K.
Dupont Wheat CDNA Sequence
                                                                                                                                                                                                  Eukaryotas, Viridinales, Streptophyta; Embryophyta; Tracheophyta; Spermatophyta; Wagnollophyta; Liliopsida; Poales; Poaceae; Pooldeae; Triticeae; Triticeae; Triticeae; Triticum.

1 (bases I to 366)
Tringey, S.V., Powell, W., Wolters, P., Dolan, M., Hainey, C., Yuan, Z., Miao, G., Caraher, N. and Hanafey, M.K.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    E. I. DuPoint de Nemours and Company
1 Innovation Way, P.O. Box 6104, Newark, DE 19714-6104, USA
Tel: 302-631-2602
Fax: 302-631-2607
Email: Scott.V.Tingey@USA.dupont.com
Seq primer: M13.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Crop Genetics
E. I. DuPont de Nemours and Company
1 Innovation Way, P.O. Box 6104, Newark, DE 19714-6104, USA
Tal: 302-631-2602
Fax: 302-631-2607
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          99860
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Length:
Matches:
Conservative:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Mismatches:

    .36
    /organism="Triticum aestivum"

                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Indels:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Triticum aestivum (bread wheat)
Triticum aestivum
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       US-09-701-229-2 (1-448) x CA622878 (1-366)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Unpublished
Contact: Scott V. Tingey
Crop Genetics
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Unpublished
Contact: Scott V. Tingey
                                      CA622878.1 GI:25201174
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       100.00%
100.00%
2.01%
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              256
9.00
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Percent Similarity:
Best Local Similarity:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Ø
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Alignment Scores:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Query Match:
DB:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            CA692665/c
LOCUS
                                                                                                                         SOURCE
ORGANISM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     BASE COUNT
ORIGIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Pred. No.:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   DEFINITION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ACCESSION
VERSION
KEYWORDS
SOURCE
ACCESSION
VERSION
KEYWORDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                     TITLE
JOURNAL
COMMENT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ORGANISM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   TITLE
JOURNAL
COMMENT
                                                                                                                                                                                                                                                                                                                                    REFERENCE
AUTHORS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              RESULT 13
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  REFERENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     AUTHORS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                FEATURES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Score:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ò
```

```
380 bp DNA linear GSS 30-MAR-2000 RPCI-23-415J24.TV RPCI-23 Mus musculus genomic clone RPCI-23-415J24 AZ060728
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Rodentia; Sciurognathi; Muridae; Murinae; Mus. 1 (bases 1 to 380)
Zhao,S., Nierman,W., Feldblyum,T., Malek,J., Shatsman,S., Akinret,B., Levins,M., Mcgann,S., Tsegaye,G., Geer,K., Krol,M., de Jong,P. and Fraser,C.M.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Clones are derived from the mouse BAC library RPCI-23. For BAC library availability, please contact Pieter de Jong (pleter@dejong.med.buffalo.edu). Clones may be purchased from BACPAC Resources (http://bacpac.med.buffalo.edu/orderingframe.htm)
                                           'tissue_type="26 somite embryos, adult livers, shield
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Other_GSSs: RPCI-23-415J24.TJ
Contact: Shaying Zhao
Department of Eukaryotic Genomics
The Institute for Genomic Research
9712 Medical Center Dr., Rockville, MD 20850, USA
Tel: 301 838 0200
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Mouse BAC End Sequences from Library RPCI-23
Unpublished
                                                                                                                                                                                                                                                                                                                                                                                                                                                     00000
                                                                                                                                                                                                                                                                                                                                                                                                                                                  Matches:
Conservative:
Mismatches:
                                                                                                                                                                                                                                                                                                                                                                           101 t
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Indels:
                                                                                                                                                                                                                                                                                                                                                                                                                                     Length:
                                                           stage embryos"
/lab_host="XL1-blue MRF"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   /db_xref="taxon:7955"
/clone="IMAGE:3717111"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        US-09-701-229-2 (1-448) x AI544865 (1-380)
                                                                                                                                                                                                                                                                                                                                                                          82 g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Mus musculus (house mouse)
Mus musculus
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    AZ060728.1 GI:7351899
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Email: szhao@tigr.org
                               /sex="mixed"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                 100.00%
                                                                                                                                                                                                                                                                                                                                                           control."
                                                                                                                                                                                                                                                                                                                                                                                                                                                              Percent Similarity:
Best Local Similarity:
Query Match:
                                                                                                                                                                                                                                                                                                                                                                          119
                                                                                                                                                                                                                                                                                                                                                                                                                     Alignment Scores:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   VERSION
KEYWORDS
SOURCE
ORGANISM
                                                                                                                                                                                                                                                                                                                                                                          BASE COUNT
                                                                                                                                                                                                                                                                                                                                                                                                                                     Pred. No.:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              AZ060728/c
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          DEFINITION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      TITLE
JOURNAL
COMMENT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ACCESSION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                RESULT 15
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              REFERENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            AUTHORS
                                                                                                                                                                                                                                                                                                                                                                                         ORIGIN
```

Search completed: August 14, 2003, 11:13:47 Job time : 2305 secs

```
/note="organ: Kidney/Brain; Vector: pBACe3.6; Site_1:
Cool: Site_2: EcoR; Female C57BL/6J mouse kidney and/or
brain genomic DNA was isolated and partially digested
with a combination of EcoRI and EcoRI Methylase. Size
selected DNA was cloned into the pBACe3.6 vector at the
ECORI sites. The ligation products were transformed into
DH10B electrocompetent cells (BRL Life Technologies).
or from Resea ch Genetics (info@resgen.com). BAC end page:
http://www.tigr.org/tdb/bac_ends/mouse/bac_end_intro.html
blate: 415 row: J column: 24
Seg primer: T7
Class: BAC ends.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      800000
00000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Conservative:
Mismatches:
Indels:
Gaps:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Length:
Matches:
                                                                                                                                                       /mol_type="genomic DNA"
/strain="C57BL/6J"
/db_xref="taxon:10090"
/clone="RPCI-23-415J24"
/sex="Female"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               277 SerAsnAlaLeuAlaAlaLeuAlaLeu 285
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 328 TCAAATGCTTTAGCAGCTTTGGCATTG 302
                                                                                                                                       /organism-"Mus musculus"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           US-09-701-229-2 (1-448) x AZ060728 (1-380)
                                                                                                                                                                                                                                                      /lab_host="DH10B"
/clone_l1b="RPCI-23"
                                                                                                Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          100.00%
100.00%
2.01%
28
                                                                                                                                                                                                                                                                                                                                                                                                                             71 c
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Best Local Similarity:
Query Match:
                                                                                                                                                                                                                                                                                                                                                                                                                             132
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Percent Similarity:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Alignment Scores:
                                                                                                                      source
                                                                                                                                                                                                                                                                                                                                                                                                                           BASE COUNTO
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Pred. No.:
                                                                                                  FEATURES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 g
```

```
(without alignments)
3455.281 Million cell updates/sec
                                                                                                                                                                         August 14, 2003, 07:48:07; Search time 350 Seconds
GenCore version 5.1.6 Copyright (c) 1993 - 2003 Compugen Ltd.
                                                                                                                    OM protein - nucleic search, using frame_plus_p2n model
                                                                                                                                                                                                                                                                                                 US-09-701-229-2
```

Run on:

448 1 MSLIASDHFRIVVGLGKSGM......MFKNFEERGRLFAKAVEELA Total number of hits satisfying chosen parameters: 2552756 seqs, 1349719017 residues OLIGO Xgapop 60.0 , Xgapext 60.0 Ygapop 60.0 , Ygapext 60.0 Fgapop 6.0 , Fgapext 7.0 Delop 6.0 , Delext 7.0 Title: Perfect score: Scoring table: Word size: Sequence: Searched:

Minimum DB seq length: 25 Maximum DB seq length: 200000000

Post-processing: Listing first 45 summaries Command line parameters:

```
/SIDS1/gcgdata/geneseq/geneseqn-emb1/NA2003.DAT:*
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             /SIDS1/gcgdata/geneseq/geneseqn-emb1/NA2001A.DAT:
                                                            /SIDSI/gcgdata/geneseq/geneseqn-embl/NA1981.DAT
/SIDSI/gcgdata/geneseq/geneseqn-embl/NA1982.DAT
/SIDSI/gcgdata/geneseq/geneseqn-embl/NA1983.DAT
/SIDSI/gcgdata/geneseq/geneseqn-embl/NA1984.DAT
/SIDSI/gcgdata/geneseq/geneseqn-embl/NA1986.DAT
/SIDSI/gcgdata/geneseq/geneseqn-embl/NA1986.DAT
/SIDSI/gcgdata/geneseq/geneseqn-embl/NA1988.DAT
/SIDSI/gcgdata/geneseq/geneseqn-embl/NA1988.DAT
/SIDSI/gcgdata/geneseq/geneseqn-embl/NA1989.DA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      /SIDS1/gcgdata/geneseq/geneseqn-embl/NA1994./SIDS1/gcgdata/geneseq/geneseqn-embl/NA1995./SIDS1/gcgdata/geneseq/geneseqn-embl/NA1996.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 /SIDS1/gcgdata/geneseg/genesegn-emb1/NA1991.
/SIDS1/gcgdata/geneseg/genesegn-emb1/NA1992.
/SIDS1/gcgdata/geneseg/genesegn-emb1/NA1993.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   /SIDS1/gcgdata/geneseq/geneseqn-emb1/NA1998
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           /SIDS1/gcgdata/geneseq/geneseqn-emb1/NA2002
                                                                                                                                                                                                                                                                                                                                                                                                                                                          /SIDS1/gcgdata/geneseq/genesegn-embl/NA1990
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      /SIDS1/gcgdata/geneseg/genesegn-emb1/NA1999
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      /SIDS1/gcgdata/geneseq/genesegn-emb1/NA2000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        /SIDS1/gcgdata/geneseq/genesegn-embl/NA1997
                                           /SIDS1/gcgdata/geneseq/geneseqn-emb1/NA1980.
N_Geneseq_19Jun03:
Database
```

Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed,

and is derived by analysis of the total score distribution.

### Score Match Langth DB ID    148   100.0   1347   23 AAS2875     448   100.0   1450   21 AAZ2858     4   100.0   1450   22 AAZ2858     4   3.1   1080   23 AAS99166     5   14   3.1   1314   23 AAS99166     6   14   3.1   1317   23 AAS53916     1   3.1   3117   23 AAS53916     1   3.1   3117   23 AAS53916     1   3.1   3117   23 AAS9916     1   3.1   4944   23 AAS9916     1   2.2   2703   23 AAS9916     2   2   2   256   21 AAS3174     3   3   3   2   2   2     49   2.0   218   23 AAS9916     3   2   2   2   34998     3   3   9   2   0     4   3   3   3   3     5   2   0   2   2     5   2   3   2   3     6   2   2   3   3     7   3   3   3     8   2   0   2     9   2   0   2     9   2   0   2     9   2   0   2     10   2   2     9   2   0   2     9   2   0   2     10   2   3     9   2   0   3     10   2   3     10   3   3     10   3   3     10   3   3     10   3   3     10   3   3     10   3   3     10   3   3     10   3   3     10   3   3     10   3   3     3   4   9   2     4   9   2   0     5   13   0     5   13   0     5   13   0     5   13   0     5   13   0     5   13   0     5   13   0     5   13   0     5   13   0     5   13   0     5   13   0     5   13   0     5   13   0     5   13   0     5   13   0     5   13   0     5   13   0     6   13   0     7   14   0     7   15   0     8   15   0     8   17   13     8   18   0     9   2   0     10   13   0     11   0   0     12   0   0     13   0   0     13   0   0     14   0   0     15   0   0     15   0   0     17   19   0     18   0   0     19   0   0     10   0   0     10   0   0     10   0   0     10   0   0     10   0   0     10   0   0     10   0   0     10   0   0     10   0   0     10   0   0     10   0   0     10   0   0     10   0   0     10   0   0     10   0	Ouery  448 100.0 1347 23 AAS5475  448 100.0 1347 23 AAS5958  14 3.1 1080 23 AAS89588  14 3.1 1080 23 AAS89518  14 3.1 1080 23 AAS89442  14 3.1 2058 23 AAS59442  14 3.1 2058 23 AAS89408  16 3.1 4444 23 AAS89408  17 2.2 3A58940  18 3.1 4444 23 AAS89418  18 3.1 4444 23 AAS89418  10 2.2 3A59442  11 3.1 2058 21 AAZ53174  10 2.2 3A59491  10 2.2 3A5980 21 AAAS9178  10 2.2 3A5980 21 AAX53174  10 2.2 3A588419  2 2 1335 23 AAS51859  2 2 2 34980 21 AAX53178  9 2 0 215 2135 23 AAS51859  9 2 0 215 2135 23 AAS51859  9 2 0 285 21 AAZ53158  9 2 0 286 21 AAZ53158  9 2 0 2 286 21 AAZ53158  9 2 0				ð			SUMMARIES	
448 100.0 1347 23 AAS54275 448 100.0 1347 23 AAS54275 14 3.1 1080 23 AAS99801 14 3.1 1080 23 AAS99801 14 3.1 1080 23 AAS99801 14 3.1 1317 23 AAS5235 14 3.1 317 23 AAS59420 14 3.1 317 23 AAS99420 14 3.1 317 23 AAS99420 14 3.1 317 23 AAS99420 16 3.1 317 23 AAS99420 17 3.1 494 23 AAS99420 18 3.1 494 23 AAS99420 19 2.2 143766 21 AAAS9140 10 2.2 349980 21 AAA81479 10 2.2 349980 21 AAA81479 10 2.2 349980 21 AAA81479 10 2.2 143766 21 AAA83187 10 2.2 143766 22 AAA88100 10 2.2 143766 23 AAA85140 10 2.2 14376 23 AAA85140 10 2.2 1347 23 AAA81410 10 2.2 14376 23 AAA85140 10 2.0 1347 23 AAA5140	448 100.0 1347 23 AAS54275 448 100.0 1347 23 AAS54275 14 3.1 1080 23 AAS99280 14 3.1 1080 23 AAS99801 14 3.1 1080 23 AAS99166 14 3.1 1317 23 AAS52453 14 3.1 1317 23 AAS52255 14 3.1 1317 23 AAS52295 14 3.1 1317 23 AAS52295 14 3.1 1317 23 AAS5295 14 3.1 1317 23 AAS59240 14 3.1 1317 23 AAS99240 14 3.1 317 23 AAS99240 16 3.1 317 23 AAS99240 17 3.1 317 23 AAS99240 18 3.1 317 23 AAS99240 19 2.2 356 21 AAS9181 10 2.2 356 21 AAS9110 2.2 349980 21 AAS9110 2.2 356 21 AAS9110 2.2 36 22 ABS8711 2.5	Resu.	).	a)	Query Match	Length	DB	8	escription
448 100.0 1450 21 AAZ47131 19 4.2 96109 22 AAS89548 14 3.1 1080 23 AAS895801 14 3.1 1080 23 AAS895016 14 3.1 1317 23 AAS53453 14 3.1 1317 23 AAS53453 14 3.1 1317 23 AAS53453 14 3.1 1317 23 AAS53451 14 3.1 1317 23 AAS53451 14 3.1 317 23 AAS53451 14 3.1 317 23 AAS89816 15 3.1 317 23 AAS89816 16 2.2 3494 23 AAS89816 17 2.5 2703 23 AAS89816 10 2.2 3494 23 AAS89816 10 2.2 3494 23 AAS89816 10 2.2 3494 23 AAS89816 10 2.2 34998 21 AAR81479 10 2.2 34998 21 AAZ53174 10 2.2 34998 21 AAZ53178 10 2.2 34998 21 AAZ53176 10 2.2 3498 22 AAX53176 10 2.2 347 23 AAS5483 11 2.5 2.0 327 23 AAS5819 11 2.5 2.0 327 23 AAS5819 12 2.0 327 23 AAS5819 13 2.0 327 23 AAS5819 14 3.1 3.1 3.1 3.1 3.1 3.1 3.1 3.1 3.1 3.1	448 100.0 1450 21 AAR47131 19 4.2 96109 22 AAR89548 14 3.1 1080 23 AAR89201 14 3.1 1080 23 AAR89201 14 3.1 1317 23 AAR89201 14 3.1 317 23 AAR89200 14 3.1 4944 23 AAR89200 15 2.2 366 21 AAR8910 10 2.2 356 21 AAR8910 10 2.2 356 21 AAR8910 10 2.2 356 21 AAR81479 10 2.2 1335 25 AB241528 10 2.2 1335 21 AAR81479 10 2.2 1336 21 AAR81479 10 2.2 1340 21 AAR81479 10 2.2 1356 21 AAR81479 10 2.2 1356 21 AAR81479 10 2.2 1356 21 AAR81490 10 2.2 1356 21 AAR81490 10 2.2 1356 21 AAR81490 10 2.2 1356 22 AAR81490 10 2.2 1356 21 AAR81490 10 2.2 1356 21 AAR81490 10 2.2 1356 22 AAR81490 10 2.2 1356 21 AAR81490 10 2.2 1356 22 AAR81490 10 2.2 1356 21 AAR81490 10 2.2 1356 21 AAR81490 10 2.2 1356 22 AAR81490 10 2.2 1356 21 AAR81490 10 2.2 1357 23 AAR81490 10 2.2 1357 23 AAR81490 10 2.0 135 23 AAR81490 10 2.0 135 23 AAR81490 10 2.0 135 23 AAR81490 10 2.0 1350 23 AAR81490 10 2.0 1340 20 AAX886490 10 2.0 1340 23 AAR81490 10 2.0 1340 20 AAX88640 10 2.0 1340 23 AAR81490 10 2.0 1340 23 AAR81490 10 2.0 1340 20 AAX88640 10 2.0 1340 23 AAR81400 10 2.0 1340 23 AAR814000 10 2.0 1340 23 AAR814000000000000000000000000000000000000			48	100.0	•	33	AAS54275	seudomonas
19 4.2 96109 22 AAR28548 14 3.1 1080 23 AAS89258 14 3.1 1080 23 AAS89258 14 3.1 1080 23 AAS89258 14 3.1 1317 23 AAS83453 14 3.1 1317 23 AAS83453 14 3.1 1317 23 AAS83453 14 3.1 317 23 AAS89240 14 3.1 4944 23 AAS89240 14 3.1 4944 23 AAS89216 14 3.1 4944 23 AAS89216 16 2.2 34940 21 AAS89210 17 2.2 34980 21 AAZ33174 10 2.2 34980 21 AAZ33175 10 2.2 34980 21 AAZ33175 10 2.2 34980 21 AAZ33176 10 2.2 1335 23 AAS81400 9 2.0 285 21 AAZ33158 9 2.0 285 21 AAZ33159 9 2.0 285 21 AAZ33159 9 2.0 327 23 AAS48910 9 2.0 1347 22 AAX28684 9 2.0 1347 38 AAS48910 9 2.0 1340 23 AAS48910 9 2.0 1340 33 AAS51837 9 2.0 1347 38 AAS48910 9 2.0 1348 38 AAS48910 9 3 AAS48910	19 4.2 96109 22 AAR28548 14 3.1 1080 23 AAS89258 14 3.1 1080 23 AAS892016 14 3.1 1317 23 AAS53453 14 3.1 1317 22 AAR81460 14 3.1 1317 23 AAS53453 14 3.1 1317 23 AAS5341 14 3.1 1317 23 AAS5341 14 3.1 1317 23 AAS5341 14 3.1 317 23 AAS8920 14 3.1 317 23 AAS8920 16 3.1 4944 23 AAS8916 17 2.2 3703 23 AAS8916 18 3.1 4944 23 AAS8916 19 2.2 3703 23 AAS8916 10 2.2 3703 23 AAS8916 10 2.2 3703 23 AAS5173 10 2.2 1380 21 AAA81479 10 2.2 1380 21 AAA814810 10 2.2 1380 21 AAA8131 10 2.0 138 23 AAS5104 10 2.0 138 23 AAS5104 10 2.0 1387 23 AAS5104 10 2.0 1347 24 24 24 24 24 24 24 24 24 24 24 24 24		1 73	4	90	1450	21	AAZ47131	sendomonas
14 3.1 1080 23 AASS958 14 3.1 1080 23 AASS958 14 3.1 1314 23 AASS953453 14 3.1 1317 23 AASS2295 14 3.1 1317 23 AASS9240 14 3.1 317 23 AASS99240 14 3.1 4944 23 AASS9816 14 3.1 8312 23 AASS9018 14 3.1 8312 23 AASS9018 16 2.2 3A56 21 AAAS9173 10 2.2 34980 21 AAAS9173 10 2.2 34980 21 AAAS9175 10 2.2 34980 21 AAAS9175 10 2.2 34980 21 AAAS9176 10 2.2 34980 21 AAAS9178 10 2.2 34980 21 AAAS9187 10 2.2 3498 22 AASS9086 135 23 AASS9086 136 22 AASS9086 137 28 AASS9086 138 23 AASS9086 139 2.0 1347 28 AASS908 130 1340 23 AASS9089 131 20 1347 BP. 4275; 128-2002 (first entry)	14 3.1 1080 23 AAS89258 14 3.1 1080 23 AAS89801 14 3.1 1314 23 AAS89801 14 3.1 1317 22 AAS81453 14 3.1 1317 23 AAS82255 14 3.1 1317 23 AAS82255 14 3.1 1317 23 AAS89240 14 3.1 3117 23 AAS89216 14 3.1 3117 23 AAS89216 14 3.1 3117 23 AAS89216 14 3.1 4944 23 AAS8916 14 3.1 1830121 17 AAT82663 11 2.5 2703 23 AAS86661 10 2.2 356 21 AAS91179 10 2.2 1335 25 AAS81490 9 2.0 135 23 AAS81490 9 2.0 285 21 AAS81179 9 2.0 285 21 AAS81159 9 2.0 286 21 AAS81169 9 2.0 287 25 AAS81160 9 2.0 287 25 AAS81160 9 2.0 287 23 AAS81160 9 2.0 287 25 AAS81160 9 2.0 287 25 AAS81160 9 2.0 287 22 AAS81160 9 2.0 287 22 AAS81160 9 2.0 287 23 AAS81160 9 2.0 287 23 AAS81160 9 2.0 135 23 AAS81160 9 2.0 1242 20 AAS81161 9 2.0 1347 23 AAS81613  ALIGNMENTS  ALIGNMENTS  **BB-2002 (first entry)		m	19		96109	22	AAF28548	fragn
14 3.1 1080 23 AASS9801 14 3.1 1080 23 AASS9801 14 3.1 1317 22 AASS3453 14 3.1 1317 22 AASS3453 14 3.1 1317 22 AASS3453 14 3.1 1317 22 AASS63015 14 3.1 2058 23 AASS916 14 3.1 317 23 AASS9916 14 3.1 4942 23 AAS9916 16 2.2 3703 23 AAS9916 10 2.2 356 21 AAS33173 10 2.2 1336 21 AAS53173 10 2.2 1336 21 AAS51317 10 2.2 1336 21 AAS51317 10 2.2 1336 21 AAS51315 10 2.2 1337 23 AAS51020 10 2.2 1336 21 AAS51315 10 2.2 1337 23 AAS49910 10 2.2 1337 23 AAS49910 10 2.2 1337 23 AAS49910 10 2.0 297 25 ABX87721 10 2.0 1347 23 AAS49460 12 2.0 1347 23 AAS54837 13 2 1347 23 AAS54837 14 3.1 18 AAY8337 15 2.0 1347 23 AAS54837 16 2.0 1347 23 AAS54837 17 18 AAY83927 18 2.0 1347 23 AAS54837 20 1347 2475 20 1347 2475 20 1347 2475 20 1347 2475 20 1348 24 AAS34837 20 1347 2475 20 1347 2475 20 1347 2475 20 1348 24 AAS34837 20 1348 24 AAS34837 20 1348 24 AAS34837 20 1348 24 AAS34837 20 1347 2475 20 1348 24 AAS34837 20 1348 24 AAY34837 20 1348	14 3.1 1080 23 AASS9801 14 3.1 1080 23 AASS9801 14 3.1 1317 22 AASS2255 14 3.1 1317 22 AASS2255 14 3.1 1317 23 AASS2355 14 3.1 317 23 AASS2355 14 3.1 317 23 AASS9816 14 3.1 317 23 AASS9816 14 3.1 4942 23 AASS9816 14 3.1 4942 23 AASS9816 14 3.1 4942 23 AASS9816 14 3.1 4944 23 AASS9816 10 2.2 3766 21 AASS377 10 2.2 1335 23 AASS917 10 2.2 1335 21 AASS317 10 2.2 134980 21 AASS317 10 2.2 134980 21 AASS317 10 2.2 134980 21 AASS317 10 2.2 134980 21 AASS315 9 2.0 216 23 AASS910 9 2.0 285 21 AASS315 9 2.0 287 23 AASS910 9 2.0 1347 23 AASS910 9 2 2 2 1347 24 AASS910 9 2 2 2 1347 24 AASS910 9 2 2 2 1347 24 AASS910 9 2		4	14		1080	23	AAS89258	encodino
14 3.1 1000 23 AASS3453 14 3.1 1317 23 AASS3453 14 3.1 317 23 AASS3453 14 3.1 317 23 AASS3259 14 3.1 317 23 AASS3250 14 3.1 4942 23 AASS3916 14 3.1 4944 23 AASS3916 14 3.1 4944 23 AASS9181 14 3.1 4944 23 AASS9181 14 3.1 4944 23 AASS9181 16 2.2 3 AASS3173 10 2.2 349980 21 AASS3175 10 2.2 349980 21 AASS3157 20 285 21 AASS3157 20 285 21 AASS3159 20 286 21 AASS3159 20 286 21 AASS3159 20 287 25 ABSX97421 20 29 20 288 21 AASS3159 20 29 20 288 21 AASS3159 20 29 20 327 25 ABSX9781 20 20 327 25 ABSX9781 20 20 327 23 AASS4894 20 327 23 AASS4894 20 327 23 AASS3183 20 327	14 3.1 1000 23 AASS3453 14 3.1 1317 23 AASS3453 14 3.1 1317 23 AASS3453 14 3.1 1317 23 AASS3453 14 3.1 317 23 AASS3453 14 3.1 317 23 AASS3453 14 3.1 317 23 AASS325 14 3.1 4942 23 AASS926 14 3.1 4942 23 AASS926 14 3.1 4944 23 AASS926 14 3.1 4944 23 AASS9273 14 3.1 4944 23 AASS9273 16 3.1 317 23 AASS926 17 2.2 3ASS9816 18 3.1 4944 23 AASS928 10 2.2 3ASS9816 10 2.2 356 21 AASS3173 10 2.2 34980 21 AASS3174 10 2.2 34990 21 AASS3175 10 2.2 1335 22 AASS3175 10 2.2 1335 23 AASS31020 9 2.0 285 21 AASS3158 9 2.0 285 21 AASS3159 9 2.0 138 23 AASS3160 9 2.0 138 23 AASS3160 9 2.0 1320 18 AAVS3317 9 2.0 1347 23 AASS463 9 2.0 1347 23 AASS463 9 2.0 1347 23 AASS463 9 2.0 1347 23 AASS463 9 2.0 1347 23 AASS31837 9 2.0 1347 24 AASS31837 9 2.0 1348 24 AASS31837 9 2.0 1347 24 AASS31837 9 2.0 1347 24 AASS31837		ת ע	14		1080	5 6	AASBUBUI	encoding
14 3.1 1317 22 AAH81460 14 3.1 1317 22 AAA81460 14 3.1 1317 23 AAS55341 14 3.1 2058 23 AAS73012 14 3.1 317 23 AAS89240 14 3.1 317 23 AAS89240 14 3.1 4942 23 AAS89240 14 3.1 4942 23 AAS89240 14 3.1 4944 23 AAS89213 14 3.1 1830121 17 AAR42063 11 2.5 2703 23 AAS66661 10 2.2 356 21 AAZ53173 10 2.2 1380 21 AAZ53174 10 2.2 1380 21 AAZ53175 10 2.2 1380 21 AAZ53159 9 2.0 285 21 AAZ53159 9 2.0 285 21 AAZ53159 9 2.0 286 21 AAZ53159 9 2.0 287 21 AAZ53159 9 2.0 135 23 AAS49460 9 2.0 134 23 AAS49460 9 2.0 134 22 AAX5318 9 2.0 1347 23 AAS54613 9 2.0 1347 24 20 AAX8864 9 2.0 1340 24 20 AAX8864 9 2.0 1340 24 AAX8864 9 3 4 AAX8884 9 3 4 AAX8884 9 5 5 AAX8884 9 5 AAX8884 9 5 AAX8884 9 5 A	14 3.1 1317 22 AAH81460 14 3.1 1317 23 AAS5295 14 3.1 1317 23 AAS53915 14 3.1 317 23 AAS53915 14 3.1 317 23 AAS59916 14 3.1 317 23 AAS99240 14 3.1 317 23 AAS99240 14 3.1 4944 23 AAS99216 14 3.1 4944 23 AAS99216 14 3.1 4944 23 AAS99216 11 2.5 2703 23 AAS69213 11 2.5 2703 23 AAS6661 10 2.2 34990 21 AAR3173 10 2.2 34990 21 AAR81479 10 2.2 14375 23 AAS50926 9 2.0 285 21 AAZ53158 9 2.0 285 21 AAZ53159 9 2.0 285 21 AAZ53159 9 2.0 285 21 AAZ53159 9 2.0 285 21 AAX53159 9 2.0 285 21 AAX53159 9 2.0 285 21 AAX53159 9 2.0 138 23 AAS50409 9 2.0 138 23 AAS50409 9 2.0 1347 23 AAS54613 9 2.0 1347 23 AAS54613 9 2.0 1347 23 AAS54613 44275 standard; DNA; 1347 BP.  **EB-2002 (first entry)		٥,	14		1314	2 6	AASSU100 AASS3453	encourng
14 3.1 1317 23 AASS2295 14 3.1 1317 23 AASS2341 14 3.1 1317 23 AASS6905 14 3.1 3117 23 AASS6905 14 3.1 3117 23 AASS6905 14 3.1 3117 23 AASS6905 14 3.1 4944 23 AAS89316 14 3.1 4944 23 AAS89316 14 3.1 4944 23 AAS89316 15 2.5 2703 23 AASS6661 10 2.2 356 21 AAZ53173 10 2.2 356 21 AAZ53173 10 2.2 349900 21 AAZ53175 10 2.2 349900 21 AAZ53158 9 2.0 285 21 AAZ53159 9 2.0 287 23 AASS6040 9 2.0 288 21 AAZ53159 9 2.0 297 28 AASS6040 9 2.0 287 23 AASS6040 9 2.0 138 23 AASS6040 9 2.0 137 19 AAV53378 9 2.0 138 22 AASS6040 9 2.0 138 20 AASS6040 9 2.0 138 22 AASS6040 9	14   3.1   1317   23   AAS56295   E. COLI DNA for 14   3.1   1317   23   AAS56341   Balamonella typhi		. &	14		1317	22	AAH81460	
14 3.1 1317 23 AAS56341 14 3.1 2058 23 AAS69012 14 3.1 2058 23 AAS690240 14 3.1 4941 23 AAS690240 14 3.1 4944 23 AAS690181 11 2.5 2703 23 AAS64579 10 2.2 356 21 AAZ3173 10 2.2 1355 25 ABZ4128 10 2.2 1355 21 AAZ3175 10 2.2 1355 22 AAS81479 10 2.2 1355 23 AAS6902 10 2.2 1356 21 AAZ3175 10 2.2 13768 21 AAZ3175 10 2.2 349980 21 AAZ3175 10 2.2 1389 22 AAS8042 9 2.0 285 21 AAZ3159 9 2.0 383 23 AAS60409 9 2.0 138 22 AAS8044 9 2.0 134 23 AAS8044 9 2.0 134 23 AAS80461 9 2.0 134 23 AAS1837 9 2.0 135 23 AAS1837 9 2.0 137 18 AAY3338 9 2.0 137 18 AAY3338 9 2.0 137 18 AAX38461 9 2.0 137 23 AAS1837 9 2.0 137 24 AAY331837 9 2.0 137 24 AAY331837 9 2.0 137 24 AAX38840 9 2.0 137 24 AAX38844 9 2.0 137 28 AAS1837 9 2.0 138 AAV14444 9 2.0 137 28	14 3.1 1317 23 AAS56341 14 3.1 2058 23 AAS73012 14 3.1 2058 23 AAS89240 14 3.1 4811 23 AAS89240 14 3.1 4811 23 AAS89240 14 3.1 4944 23 AAS89273 14 3.1 4944 23 AAS89273 14 3.1 4944 23 AAS89273 15 2.5 7703 23 AAS64579 10 2.2 356 21 AAS5173 10 2.2 356 21 AAS5175 10 2.2 34980 21 AAS5175 10 2.2 34980 21 AAS51175 10 2.2 34980 22 AAS51020 9 2.0 285 21 AAS51159 9 2.0 285 22 AAS51020 9 2.0 285 23 AAS51020 9 2.0 285 21 AAS51159 9 2.0 135 23 AAS51031 9 2.0 135 23 AAS51031 9 2.0 135 23 AAS51031 9 2.0 1347 23 AAS51031 9 2.0 1347 23 AAS51037		6	14		1317	23	AAS52295	for
14 3.1 2058 23 AAS73012 14 3.1 317 23 AAS69095 14 3.1 3117 23 AAS690240 14 3.1 4831 23 AAS89240 14 3.1 4942 23 AAS892816 14 3.1 4944 23 AAS89018 14 3.1 4944 23 AAS89018 14 3.1 183012 17 AAS89018 11 2.5 2703 23 AAS6661 10 2.2 3703 23 AAS6661 10 2.2 3703 23 AAS6661 10 2.2 3703 23 AAS6661 10 2.2 349980 21 AAS73175 10 2.2 349980 21 AAS73175 10 2.2 349980 21 AAS73175 10 2.2 349980 21 AAS73159 9 2.0 285 21 AAS73159 9 2.0 287 23 AAS89010 9 2.0 383 23 AAS590460 9 2.0 1347 23 AAS1837 9 2.0 1347 23 AAS34613 9 2.0 1347 23 AAS34613 9 2.0 1347 23 AAS34613 9 2.0 1347 23 AAS36137 9 2.0 1347 24 AA	14 3.1 2058 23 AAS33012 14 3.1 317 23 AAS69095 14 3.1 317 23 AAS69240 14 3.1 4942 23 AAS894516 14 3.1 4944 23 AAS89916 14 3.1 4944 23 AAS89916 14 3.1 4944 23 AAS89016 14 3.1 1830121 17 AAT42063 11 2.5 2703 23 AAS6661 10 2.2 356 21 AAZ53173 10 2.2 1335 25 ABZ41528 10 2.2 1336 21 AAZ53175 10 2.2 349980 21 AAZ53159 9 2.0 285 21 AAZ53159 9 2.0 135 23 AAS49460 9 2.0 135 23 AAS49460 9 2.0 1347 23 AAS49460 9 2.0 1347 23 AAS49460 9 2.0 1347 23 AAS54813 9 2.0 1347 23 AAS51837 9 2.0 1347 20 AAX58613 9 2.0 1347 23 AAS51837 9 2.0 1347	. ,	10	14		1317	23	AAS56341	onella typhi
14 3.1 3117 23 AASS69095 14 3.1 494 23 AAS89240 14 3.1 494 23 AAS89213 14 3.1 494 23 AAS8916 14 3.1 494 23 AAS8916 14 3.1 494 23 AAS8918 14 3.1 494 23 AAS8918 16 3.1 494 23 AAS8918 17 2.5 2703 23 AAS8661 18 2.5 2703 23 AAS6651 10 2.2 356 21 AAZ53174 10 2.2 69346 21 AAZ53174 10 2.2 1380 21 AAZ53174 10 2.2 1380 21 AAZ53176 10 2.2 349980 21 AAZ53158 9 2.0 285 21 AAZ53158 9 2.0 285 21 AAZ53158 9 2.0 285 21 AAZ53159 9 2.0 287 25 ABX87421 9 2.0 288 23 AAS868910 9 2.0 287 25 ABX87421 9 2.0 287 28 ABX87421 9 2.0 287 28 AAS868910 9 2.0 1370 28 AAS86891 9 2.0 1370 28 AAS86891 9 2.0 1350 23 AAS31837 9 2.0 1350 23 AAS51837 9 2.0 1350 24 AAS8684 9 2.0 1350 24 AAX8684 9 2.0 1350 2	14 3.1 3117 23 AASS69205 14 3.1 3117 23 AASS69205 14 3.1 4942 23 AAS892040 14 3.1 4944 23 AAS89203 14 3.1 4944 23 AAS8916 14 3.1 4944 23 AAS8916 11 2.5 2703 23 AAS866579 11 2.5 2703 23 AAS86661 11 2.5 2703 23 AAS86661 10 2.2 356 21 AAZ33174 10 2.2 1335 21 AAZ33174 10 2.2 1336 21 AAZ3175 10 2.2 1398 21 AAZ3175 10 2.2 1398 21 AAZ3175 10 2.2 1437668 21 AAAS1490 10 2.2 1437668 21 AAZ3157 10 2.2 1437668 21 AAZ3157 10 2.2 1437668 21 AAX31157 10 2.2 1437668 21 AAX31157 10 2.2 1437668 21 AAX31159 10 2.0 285 21 AAZ3157 10 2.0 285 21 AAZ3159 10 2.0 285 21 AAZ3189 10 2.0 137 19 AAY3311 10 2.0 1347 23 AAS48187 10 2.0 1347 23 AAS48187 10 2.0 1347 BP. 14275 14275 1EB-2002 (first entry)		11	14		2058	23	AAS73012	encoding
14 3.1 411/ 23 AASSB916 14 3.1 4942 23 AASSB916 14 3.1 4944 23 AASSB916 15 2.5 2703 23 AASS6651 10 2.2 356 21 AAZ5173 10 2.2 1335 25 ABZ1528 10 2.2 349900 21 AAZ51175 10 2.2 349900 21 AAZ51175 10 2.2 349900 21 AAZ51158 9 2.0 285 21 AASSB910 9 2.0 287 28 AASSB910 9 2.0 287 28 AASSB910 9 2.0 287 28 AASSB910 9 2.0 137 19 AAYSB378 9 2.0 137 19 AAYSB378 9 2.0 138 22 AASSB81 9 2.0 1347 23 AASSB81 9 2.0 1350 28 AASSB81 9 2.0 137 28 AASSB81	14 3.1 411/ 23 AASS9410 14 3.1 4942 23 AASS9410 14 3.1 4944 23 AASS9816 14 3.1 4944 23 AASS9816 14 3.1 4944 23 AASS9816 18 3.1 4944 23 AASS9816 19 2.1 4944 23 AASS9816 10 2.2 3703 23 AASS665 10 2.2 356 21 AAZ53174 10 2.2 6936 21 AAZ53174 10 2.2 1385 22 AAZ53174 10 2.2 1389 21 AAZ53175 10 2.2 143766 21 AAR31490 9 2.0 285 21 AAZ53157 9 2.0 285 21 AAZ53159 9 2.0 287 25 ABX87421 9 2.0 287 25 ABX87421 9 2.0 287 25 AAX53169 9 2.0 287 22 AASS48910 9 2.0 327 23 AASS48910 9 2.0 327 23 AASS48910 9 2.0 327 23 AASS4811 9 2.0 327 23 AASS4811 9 2.0 327 23 AASS4811 9 2.0 327 23 AASS4811 9 2.0 1347 23 AASS4811 9 2.0 1347 23 AASS4811 9 2.0 1347 20 AAX28684 9 2.0 1347 20 AAX28684 9 2.0 1347 20 AAX28684 9 2.0 1347 20 AAX38684 9 2.0 1347 BP. 4275; FBB-2002 (first entry)		17	14		3117	23	AAS69095	encoding
14 3.1 444. 23 AASSS4016 14 3.1 444. 23 AASSS4016 14 3.1 14944 23 AASS9018 14 3.1 183012 17 AAV42063 11 2.5 2703 23 AASS6661 10 2.2 356 21 AAS3174 10 2.2 1355 25 AAS3174 10 2.2 1355 25 AAS3174 10 2.2 1355 25 AAS3175 10 2.2 1360 21 AAS1470 10 2.2 1355 25 AAS3175 10 2.2 143766 21 AAAS1490 9 2.0 135 23 AASS0926 9 2.0 285 21 AAS3158 9 2.0 285 21 AAS3159 9 2.0 285 22 AASS0409 9 2.0 285 23 AASS0409 9 2.0 137 19 AAVS3378 9 2.0 138 22 AASS0409 9 2.0 137 19 AAVS3378 9 2.0 1350 23 AASS1837 9 2.0 1350 24 AA	14 3.1 494 23 AASSS915 14 3.1 4944 23 AASSS9173 14 3.1 14944 23 AASS9181 14 3.1 1830121 17 AAV42063 11 2.5 2703 23 AASS6651 10 2.2 356 21 AAZ53173 10 2.2 1335 25 AAZ53173 10 2.2 1335 25 AAZ53175 10 2.2 1335 25 AAZ53175 10 2.2 1336 21 AAZ53175 10 2.2 1336 21 AAZ53175 10 2.2 34980 21 AAZ53175 10 2.2 34980 21 AAZ53159 9 2.0 285 22 AAX590409 9 2.0 287 23 AASS90409 9 2.0 287 23 AASS90409 9 2.0 287 23 AASS90409 9 2.0 1340 23 AASS90409 9 2.0 1347 23 AASS90804 9 2.0 1347 24 AASS90804 9 2.0		۲.	7 T	٠	311/	2 5	AAS89240	encoding
14 3.1 4444 23 AAS89273 14 3.1 4444 23 AAS89273 14 3.1 4444 23 AAS89273 11 2.5 2703 23 AAS6661 10 2.2 356 21 AAZ5173 10 2.2 1355 25 ABZ41528 10 2.2 1355 25 ABZ41528 10 2.2 34980 21 AAZ5175 10 2.2 34980 21 AAZ51175 10 2.2 34980 21 AAZ51175 10 2.2 34980 21 AAZ51175 10 2.2 34980 21 AAZ5159 10 2.0 285 21 AAZ5159 10 2.0 287 23 AAS60409 10 2.0 287 23 AAS60409 10 2.0 383 23 AAS60409 10 2.0 137 18 AAY83378 10 2.0 137 18 AAY83378 10 2.0 1370 23 AAS54613 10 2.0 1370 20 AAX28684 10 2.0 1370 23 AAS54613 10 2.0 1370 23 AAS54613	14 3.1 444 23 AAS89273 14 3.1 444 23 AAS89273 14 3.1 444 23 AAS89273 11 2.5 2703 23 AAS6651 10 2.2 356 21 AAZ53173 10 2.2 1335 25 ABZ41528 10 2.2 1335 25 ABZ41528 10 2.2 1335 25 ABZ4175 10 2.2 1335 25 ABZ4175 10 2.2 134980 21 AAZ53175 10 2.2 34980 21 AAZ53175 10 2.2 34980 21 AAZ53175 10 2.2 34980 21 AAZ53159 9 2.0 285 21 AAZ3158 9 2.0 285 21 AAZ3158 9 2.0 285 21 AAZ3159 9 2.0 285 21 AAZ3159 9 2.0 285 21 AAZ3159 9 2.0 285 21 AAZ3159 9 2.0 287 23 AAS49910 9 2.0 287 23 AAS49910 9 2.0 1320 AAS49910 9 2.0 1320 AAS49910 9 2.0 1320 AAS49910 9 2.0 1347 23 AAS49910 9 2.0 1347 23 AAS49910 9 2.0 1347 23 AAS51837 9 2.0 1350 23 AAS51837 9 2.0 1347 24 AAS5		# L	7 T		4651	7 6	AAS94342 AAS89816	encoding
14 3.1 4944 23 AAS90181 14 3.1 1830121 17 AAR42063 11 2.5 2703 23 AAS66661 10 2.2 356 21 AAZ53173 10 2.2 1335 25 ABZ41528 10 2.2 1336 21 AAZ53175 10 2.2 349980 21 AAZ53175 10 2.2 349980 21 AAZ53175 10 2.2 143768 21 AAZ53175 10 2.2 143768 21 AAZ53175 10 2.2 143768 21 AAZ53159 9 2.0 285 21 AAZ53159 9 2.0 287 23 AAS4940 9 2.0 1347 23 AAS49460 9 2.0 1347 23 AAS49460 9 2.0 1347 23 AAS1837 9 2.0 1347 23 AAS1837 9 2.0 1347 23 AAS1837 9 2.0 1347 23 AAS54613	14 3.1 4944 23 AAS90181 14 3.1 1830121 17 AAR42063 11 2.5 2703 23 AAS66661 10 2.2 356 21 AAZ53173 10 2.2 1336 25 ABZ41528 10 2.2 1336 21 AAZ53175 10 2.2 1336 21 AAZ53175 10 2.2 349980 21 AAZ53175 10 2.2 349980 21 AAZ53175 10 2.2 134968 21 AAZ53175 10 2.2 349980 21 AAZ53175 10 2.2 349980 21 AAZ53175 10 2.2 349980 21 AAZ53159 9 2.0 285 21 AAZ53189 9 2.0 1347 23 AAS49460 9 2.0 1242 20 AAX58140 9 2.0 1347 23 AAS331837 9 2.0 1347 29 AAS331837 9 2.0 1347 29 AAS331837 9 2.0 1347 29 AAS331837 9 2.0 1350 23 AAS331833 9 2.0 1347 23 AAS331833		91	14		4944	23	AAS89273	encoding
14 3.1 1830121 17 ARY42063 11 2.5 2703 23 AAS646579 11 2.5 2703 23 AAS66661 10 2.2 356 21 AAZ53174 10 2.2 1386 22 AAZ53174 10 2.2 1389 21 AAZ53175 10 2.2 49396 21 AAZ53175 10 2.2 349980 21 AAZ8175 10 2.2 1437668 21 AAZ81479 9 2.0 135 23 AAS1020 9 2.0 285 21 AAZ5120 9 2.0 285 21 AAZ51157 9 2.0 287 23 AAS49910 9 2.0 288 23 AAS49910 9 2.0 188 22 AAX5684 9 2.0 137 18 AAT83927 9 2.0 1350 23 AAS51837 9 2.0 1350 24 AAX51837 9 2.0 1350 24 AAX5184137 9 2.0 1350 24 AAX51844 9 2.0 135	14 3.1 1830121 17 AAR442063 11 2.5 2703 23 AAS64679 11 2.5 2703 23 AAS6665 11 2.5 2703 23 AAS6665 11 2.5 2703 23 AAS6665 10 2.2 356 21 AAZ33174 10 2.2 1335 25 ABZ41528 10 2.2 134960 21 AAR14179 10 2.2 1437668 21 AAR81479 10 2.2 1437668 21 AAR81490 9 2.0 135 23 AAS61020 9 2.0 285 21 AAZ3157 9 2.0 286 22 AAS64009 9 2.0 137 19 AAV53378 9 2.0 1188 23 AAS64819 9 2.0 137 19 AAV53378 9 2.0 1188 23 AAS48187 9 2.0 137 23 AAS1837 9 2.0 137 29 AAS51837 9 2.0 137 20 AAS51837 9 2.0 137 20 AAX38084 9 2.0 AAX38084 9		17	14		4944	23	AAS90181	encoding
11 2.5 2703 23 AAS66579 11 2.5 2703 23 AAS666579 10 2.2 356 21 AAZ53173 10 2.2 1335 25 ABZ41528 10 2.2 1335 25 ABZ41528 10 2.2 349900 21 AAZ53175 10 2.2 349900 21 AAZ53175 10 2.2 143768 21 AAA81490 9 2.0 135 23 AAS50020 9 2.0 285 21 AAZ53158 9 2.0 285 21 AAZ53159 9 2.0 285 23 AAS6940 9 2.0 285 23 AAS6910 9 2.0 287 25 ABX87811 9 2.0 287 23 AAS6910 9 2.0 137 19 AAV53378 9 2.0 138 23 AAS50409 9 2.0 1350 24 AAS51837 9 2.0 1350 24 AAX53187 9 2.0 1350 24 AAX53187 9 2.0 1350 24 AAX54613	11 2.5 2703 23 AAS64579 11 2.5 2703 23 AAS646579 11 2.2 356 21 AAZ53174 10 2.2 356 21 AAZ53174 10 2.2 1335 25 ABZ41528 10 2.2 349900 21 AAZ53175 10 2.2 349900 21 AAZ31479 10 2.2 349900 21 AAZ31670 9 2.0 135 23 AAS61020 9 2.0 285 21 AAZ3158 9 2.0 287 25 ABX87811 9 2.0 287 25 ABX87811 9 2.0 1242 20 AAX28040 9 2.0 1242 20 AAX28040 9 2.0 1242 20 AAX28040 9 2.0 1347 23 AAS6049 9 2.0 1347 23 AAS6049 9 2.0 1347 23 AAS1837 9 2.0 1347 23 AAS54613 9 2.0 1347 23 AAS54613 9 2.0 1347 23 AAS1837 9 2.0 1347 23 AAS54613 9 2.0 1340 23 AAS54613		81	14		1830121	17	AAT42063	Haemophilus inf
11 2.5 2/03 23 AASSORDEL 10 2.2 356 21 AASSORDEL 10 2.2 1355 25 AASSORDEL 10 2.2 1385 25 AASSORDEL 10 2.2 1385 25 AASSORDE 10 2.2 349980 21 AAAB1479 10 2.2 349980 21 AAAB1479 10 2.2 349980 21 AAAB1490 9 2.0 135 23 AASSORDE 9 2.0 285 21 AASSORDE 9 2.0 287 25 ABX87811 9 2.0 287 28 AASSORDE 9 2.0 287 28 AASSORDE 9 2.0 1242 20 AAXSORDE 9 2.0 1350 23 AASSORDE 9 2.0 1350 23 AASSORDEL 9 2.0 1350 24 AASSOR	11 2.5 2/03 23 AASSORDEL 10 2.2 356 21 AASSORDEL 10 2.2 1356 21 AASSORDEL 10 2.2 1380 21 AASSORDEL 10 2.2 1380 21 AASSORDE 10 2.2 349980 21 AAASI1470 10 2.2 349980 21 AAASI1490 9 2.0 135 23 AASSORDE 9 2.0 285 21 AAASI158 9 2.0 285 21 AAASI159 9 2.0 287 25 ABX87811 9 2.0 287 25 ABX87811 9 2.0 287 25 ABX87811 9 2.0 287 23 AASSORDE 9 2.0 383 23 AASSORDE 9 2.0 1347 23 AASSORDE 9 2.0 1340 20 383 23 AASSORDE 9 2.0 1347 24 ABSORDE 9 2.0 1347 2	. , ,	5 2	11;		2703	53	AAS64579	DNA encoding nove
10 2.2 356 21 AAS5317, 10 2.2 1335 25 ABG41528 10 2.2 1335 25 ABG41528 10 2.2 349980 21 AAS3175 10 2.2 349980 21 AAS81479 10 2.2 349980 21 AAS81490 9 2.0 135 23 AAS30926 9 2.0 285 21 AAS3159 9 2.0 287 23 AAS30409 9 2.0 287 23 AAS30409 9 2.0 287 23 AAS30409 9 2.0 297 25 ABX87811 9 2.0 297 23 AAS30409 9 2.0 1242 20 AAX28684 9 2.0 1240 22 AAX30409 9 2.0 1347 23 AAS31837 9 2.0 1347 23 AAS34049 9 2.0 1347 23 AAS34049 9 2.0 1347 23 AAS34049 9 2.0 1347 24 AAX30403	10 2.2 356 21 AAS53174 10 2.2 1335 25 ABG41528 10 2.2 1335 25 ABG41528 10 2.2 349980 21 AAS13175 10 2.2 349980 21 AAS13175 10 2.2 349980 21 AAS14190 9 2.0 135 23 AAS30026 9 2.0 285 21 AAS3158 9 2.0 287 23 AAS4942 9 2.0 297 25 ABX87421 9 2.0 297 25 ABX87421 9 2.0 297 25 ABX87421 9 2.0 1247 23 AAS49910 9 2.0 1327 23 AAS49910 9 2.0 1327 23 AAS49460 9 2.0 1347 23 AAS31837 9 2.0 1347 23 AAS31837 9 2.0 1347 23 AAS51837		07.0	15		2703	2 53	AAS66661 AA753173	DNA encoding nov
10 2.2 1335 25 ABZ41528 10 2.2 1380 21 AAA21575 10 2.2 349980 21 AAA21479 10 2.2 349980 21 AAA21490 9 2.0 135 23 AAS30926 9 2.0 285 21 AAZ3157 9 2.0 285 21 AAZ3157 9 2.0 285 21 AAZ3159 9 2.0 285 21 AAZ3159 9 2.0 287 23 AAS40910 9 2.0 287 23 AAS40910 9 2.0 287 23 AAS40910 9 2.0 37 23 AAS40910 9 2.0 128 22 AAS4040 9 2.0 128 22 AAS4040 9 2.0 137 23 AAS4040 9 2.0 137 23 AAS4040 9 2.0 137 23 AAS4040 9 2.0 137 23 AAS30187 9 2.0 137 24 AAS30187 9 2.0 137 23 AAS30187 9 2.0 137 23 AAS30187 9 2.0 137 23 AAS30187 9 2.0 137 23 AAS30187 9 2.0 137 24 AAS3018	10 2.2 1335 25 ABZ41528 10 2.2 1380 21 AAA215175 10 2.2 1380 21 AAA21175 10 2.2 349980 21 AAA21409 10 2.2 143768 21 AAA51490 9 2.0 135 23 AAS51020 9 2.0 285 21 AAZ51159 9 2.0 285 22 AAS48910 9 2.0 327 23 AAS48910 9 2.0 137 19 AAV3318 9 2.0 1148 22 AAA5261 9 2.0 1148 22 AAA5261 9 2.0 1147 23 AAS3187 9 2.0 1350 23 AAS54613 44275 standard; DNA; 1347 BP.		1 2	101		356	217	AA253174	Neisseria mening
10 2.2 1380 21 AAZ53175 Neisseria menin 10 2.2 49980 21 AAR81479 N. meningitidis 10 2.2 49980 21 AAR81479 Neisseria menin 10 2.2 149980 21 AAR81490 Staphylococcus 2 2.0 135 23 AAS5026 Staphylococcus 2 2.0 135 23 AAS5026 Staphylococcus 2 2.0 216 21 AAZ53157 Neisseria menin 9 2.0 216 21 AAZ53159 Neisseria menin 9 2.0 285 21 AAZ53159 Neisseria menin 9 2.0 285 21 AAZ53159 Neisseria menin 9 2.0 286 21 AAZ53159 Neisseria menin 9 2.0 287 25 ABX87811 Corn ear-derive 9 2.0 288 21 AAZ53159 Neisseria menin 9 2.0 287 25 ABX87811 Corn ear-derive 9 2.0 288 21 AAZ53159 Neisseria menin 9 2.0 288 22 ABX87811 Corn ear-derive 9 2.0 327 23 AAS50409 Staphylococcus 9 2.0 318 23 AAS50409 Staphylococcus 9 2.0 137 19 AAV53378 DNA encoding a 2.0 137 23 AAS51837 Staphylococcus 9 2.0 1320 18 AAV74391 Staphylococcus 9 2.0 1347 23 AAS51837 Staphylococcus 9 2.0 1347 23 AAS51837 Staphylococcus 9 2.0 1347 23 AAS54613 Staphylococcus 9 2.0 1347 23 AAS54613 Staphylococcus 9 2.0 1347 24 AAS51837 Staphylococcus 9 2.0 1347 BP.  4275; **EB-2002 (first entry)**  Gommonas aeruqinosa DNA for cellular proliferation protein #406.	10   2.2   1380   21   AAZ53175   Nedisseria menin   10   2.2   349980   21   AAR81479   N. meningitidis   10   2.2   349980   21   AAR81490   N. meningitidis   2.2   349980   21   AAZ51026   Staphylococcus   2.0   135   23   AAS51026   Staphylococcus   2.0   216   23   AAS48942   Staphylococcus   2.0   216   23   AAZ53158   Nedisseria menin   2.0   285   21   AAZ53159   Nedisseria menin   2.0   286   21   24   24   24   24   24   24   24		23	10		1335	25	ABZ41528	N. qonorrhoeae ni
10 2.2 69936 21 AAA81479 N. mentngitidis 10 2.2 349980 21 AAA81470 Neisseria menin 10 2.2 349980 21 AAA81490 N. mentngitidis 2.0 1437668 21 AAA81490 N. mentngitidis 9 2.0 135 23 AAS5026 Staphylococcus 9 2.0 285 21 AAZ53157 Neisseria menin 9 2.0 285 21 AAZ53159 Neisseria menin 9 2.0 285 21 AAZ53159 Neisseria menin 9 2.0 287 25 ABX87811 Corn ear-derive 9 2.0 297 25 ABX87811 Corn ear-derive 9 2.0 297 25 AAS49910 Staphylococcus 9 2.0 337 23 AAS49910 Staphylococcus 9 2.0 383 23 AAS50409 Staphylococcus 9 2.0 387 23 AAS50409 Staphylococcus 9 2.0 387 23 AAS50409 Staphylococcus 9 2.0 377 19 AAV53378 Nucleoting a 9 2.0 118 22 AAH52631 S. epidermidis 9 2.0 1370 23 AAS51837 Staphylococcus 9 2.0 1347 23 AAS51837 Staphylococcus 9 2.0 1347 23 AAS51837 Staphylococcus 9 2.0 1347 23 AAS54613 Staphylococcus 9 2.0 1347 24 AAS51837 Staphylococcus 9 2.0 1350 24 AAS51837 Staphylococcus 9 2.0 1360 24 AAS51837 Staphyl	10 2.2 69936 21 AAA81479 N. mentagitidis 10 2.2 349768 21 AAA81479 Neisseria menin 10 2.2 143768 21 AAAS1020 Staphylococcus 9 2.0 135 23 AAS51020 Staphylococcus 9 2.0 216 21 AAZ53157 Neisseria menin 9 2.0 285 21 AAZ53157 Neisseria menin 9 2.0 285 21 AAZ53159 Neisseria menin 9 2.0 287 21 AAZ53159 Corn ear-derive 9 2.0 297 25 ABX87811 Corn ear-derive 9 2.0 297 25 AAX87811 Corn ear-derive 9 2.0 297 23 AAAS4810 Staphylococcus 9 2.0 377 19 AAX87810 Staphylococcus 9 2.0 485 23 AAX8946 Staphylococcus 9 2.0 177 19 AAV53378 Staphylococcus 9 2.0 1188 22 AA485631 Staphylococcus 9 2.0 1188 22 AAA85884 Staphylococcus 9 2.0 1320 18 AAV7391 Staphylococcus 9 2.0 1347 23 AAS51837 Staphylococcus 9 2.0 1347 24 AAS51837 Staphylococcus 9 2.0 1347 24 AAS51837 Staphylococcus 9 2.0 1347 24 AAS51837 Staphylococcus 9 2.0 1348 24 AAS51837 Staphy		24	10	٠	1380	21	AAZ53175	Neisseria mening:
10 2.2 34998	10 2.2 34980 21 AAF21607 Netseria menting 110 2.2 1437668 21 AAF21607 Netseria menting 9 2.0 135 23 AAS50226 Staphylococcus 9 2.0 216 21 AAS51020 Staphylococcus 9 2.0 216 21 AAZ53157 Netseria gonor 216 22 AAZ53157 Netseria gonor 216 22 AAZ53158 Netseria menting 9 2.0 285 21 AAZ53158 Netseria menting 9 2.0 287 25 ABX8741 Corn ear-derive 9 2.0 297 25 ABX8741 Corn ear-derive 9 2.0 297 25 ABX87421 Corn ear-derive 9 2.0 298 25 ABX87421 Corn ear-derive 9 2.0 383 23 AAS49460 Staphylococcus 9 2.0 485 23 AAS49460 Staphylococcus 9 2.0 177 19 AAV5378 Staphylococcus 9 2.0 177 19 AAV5378 Staphylococcus 9 2.0 1320 18 22 AAK5864 Staphylococcus 9 2.0 1320 18 AAX58684 Staphylococcus 9 2.0 1347 23 AAS51837 Staphylococcus 9 2.0 1350 23 AAS51837 Staphylococcus 9 2.0 1350 23 AAS51837 Staphylococcus 9 2.0 1350 AAX78684 Staphylococcus 9 2.0 1350 AAX58684 Staphylococcus 9 2.0 1360 AAX58684		25	10		69936	21	AAA81479	N. meningitidis
9 2.0 135 23 AAS51020 Sraphylococcus 2.0 135 23 AAS51020 Sraphylococcus 3 2.0 135 23 AAS51020 Sraphylococcus 3 2.0 216 23 AAS51020 Sraphylococcus 3 2.0 216 23 AAS51357 Neisseria menin 9 2.0 285 21 AAZ53158 Neisseria menin 9 2.0 285 21 AAZ53159 Neisseria menin 9 2.0 297 25 ABX87411 Corn ear-derive 9 2.0 297 25 ABX87411 Corn ear-derive 9 2.0 297 23 AAS48910 Sraphylococcus 9 2.0 485 23 AAS4840 Sraphylococcus 9 2.0 717 18 AAY8378 DNA encoding a 9 2.0 1188 22 AAH52611 Sraphylococcus 9 2.0 1188 22 AAH52611 Sraphylococcus 9 2.0 1320 18 AAV53378 Sraphylococcus 9 2.0 1347 23 AAS51837 Sraphylococcus 9 2.0 1347 BP.  4275 standard; DNA; 1347 BP.  4275 standard; DNA; 1347 BP.	10. 2.0 ANS 10.0 Straphylococcus Staphylococcus Sta	. • •	26	10		349980	21	AAF21607	Neisseria mening:
9 2.0 135 23 AAS51020 Staphylococcus 9 2.0 216 23 AAS48942 Staphylococcus 9 2.0 285 21 AAZ51357 Neisseria gonor 285 21 AAZ51359 Neisseria gonor 285 21 AAZ51359 Neisseria menin 9 2.0 285 21 AAZ51359 Neisseria menin 9 2.0 285 21 AAZ51359 Neisseria menin 9 2.0 287 25 ABX87421 Corn ear-derive 9 2.0 298 25 ABX87421 Corn ear-derive 9 2.0 327 23 AAS48910 Staphylococcus 9 2.0 317 23 AAS48910 Staphylococcus 9 2.0 717 18 AAT83927 DNA encoding a 5 2.0 717 19 AAV5378 DNA encoding a 5 2.0 118 22 AAX5684 Staphylococcus 9 2.0 1320 18 AAX5684 Staphylococcus 9 2.0 1347 23 AAS51837 Staphylococcus 9 2.0 1347 BP.	9 2.0 135 23 AAS1820 Staphylococcus 9 2.0 216 23 AAS18242 Staphylococcus 9 2.0 216 23 AAS18492 Staphylococcus 9 2.0 285 21 AAZ53158 Neisseria gonor 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2		. 6	9		135	23	AAA61430 AASS0926	N. Meningiciars
9 2.0 216 23 AAS48942 Staphylococcus 9 2.0 285 21 AAZ53157 Nelsseria gonor 285 21 AAZ53158 Nelsseria menin 2 2.0 285 21 AAZ53158 Nelsseria menin 9 2.0 285 21 AAZ53159 Nelsseria menin 9 2.0 287 25 ABX87811 Corn ear-derive 9 2.0 297 25 ABX87411 Corn ear-derive 9 2.0 387 23 AAS48910 Staphylococcus 9 2.0 383 23 AAS50409 Staphylococcus 9 2.0 717 19 AAV5378 DNA encoding a 2 0 717 19 AAV5378 DNA encoding a 2 0 124 2 0 AAX58684 Nucleotide sequence of 1320 18 AAX54613 Staphylococcus 9 2.0 1347 23 AAS51837 Staphylococcus 9 2.0 1347 23 AAS51837 Staphylococcus 9 2.0 1347 23 AAS54613 Staphylococcus 9 2.0 1347 23 AAS54613 Staphylococcus 9 2.0 1347 28 AAS51837 Staphylococcus 9 2.0 1347 28 AAS51837 Staphylococcus 9 2.0 1347 BP.  ALIGNMENTS  GOTHOUR ABY 1347 BP.  ALIGNMENTS  ALIGNMENTS  GOTHOUR ABY 1347 BP.  ALIGNMENTS  GOTHOUR ABY 1406.	9 2.0 216 23 AAS48942 Staphylococcus 9 2.0 285 21 AAZ53157 Nedsseria genoral 4 2.0 285 21 AAZ53157 Nedsseria menin 2 2.0 285 21 AAZ53158 Nedsseria menin 2 2.0 285 21 AAZ53159 Nedsseria menin 2 2.0 287 25 ABX87421 Corn ear-derive 2 2.0 297 25 ABX87421 Corn ear-derive 2 2.0 327 23 AAS48910 Staphylococcus 2 2.0 327 23 AAS48910 Staphylococcus 2 2.0 327 23 AAS48910 Staphylococcus 2 2.0 717 18 AAT8327 DNA encoding a 2 2.0 717 19 AAY53378 Staphylococcus 2 2.0 1188 2 AAS5664 Scape 2 2.0 1320 18 AAS5664 Staphylococcus 2 2.0 1347 23 AAS54613 Staphylococcus 2 2.0 1347 23 AAS54613 Staphylococcus 3 2.0 1350 23 AAS54613 Staphylococcus 2 2.0 1350 23 AAS54613 Staphylococcus 2 2.0 1350 24 AAS54613 Staphylococcus 3 2.0 1350		56	0		135	23	AAS51020	Staphylococcus at
9 2.0 285 21 AA253157 Neisseria gonor 29 2.0 285 21 AA253158 Neisseria menin 9 2.0 287 21 AA253158 Neisseria menin 9 2.0 287 25 ABX87811 Corn ear-derive 9 2.0 298 25 ABX87811 Corn ear-derive 9 2.0 327 23 ABX87810 Staphylococcus 9 2.0 383 23 AAS50409 Staphylococcus 9 2.0 383 23 AAS50409 Staphylococcus 9 2.0 717 19 AA78327 DNA encoding a 9 2.0 717 19 AAV53378 Staphylococcus 9 2.0 118 22 AA415631 Staphylococcus 9 2.0 1370 18 AA74391 Staphylococcus 9 2.0 1370 23 AAS51837 Staphylococcus 9 2.0 1370 23 AAS51837 Staphylococcus 9 2.0 1370 23 AAS51837 Staphylococcus 9 2.0 1347 23 AAS51837 Staphylococcus 9 2.0 1347 23 AAS51837 Staphylococcus 9 2.0 1347 24 AAS51837 Staphylococcus 9 2.0 1347 24 AAS51837 Staphylococcus 9 2.0 1347 24 AAS51837 Staphylococcus 9 2.0 1350 23 AAS54613 Staphylococcus 9 2.0 1350 24 AAS54613 Staphylococcus 9 2.0 1360 24 AAS54614 AA	9 2.0 285 21 AAZ53157 Neisseria gonora per 2.0 285 21 AAZ53158 Neisseria menin 9 2.0 286 21 AAZ53159 Neisseria menin 9 2.0 287 25 ABX87811 Corn ear-derive corn 2.0 297 25 ABX87811 Corn ear-derive 9 2.0 298 25 ABX87811 Corn ear-derive 9 2.0 327 23 AAS48910 Staphylococcus 9 2.0 383 23 AAS50409 Staphylococcus 9 2.0 485 23 AAS49460 Staphylococcus 9 2.0 717 19 AAY5378 Staphylococcus 9 2.0 717 19 AAY5378 Staphylococcus 9 2.0 1188 22 AAX5864 Staphylococcus 9 2.0 1320 18 AAX74391 Staphylococcus 9 2.0 1347 23 AAS51837 Staphylococcus 9 2.0 1347 28 AAS51837 Staphylococcus 9 2.0 1347 28 AAS51837 Staphylococcus 9 2.0 1347 28 AAS51837 Staphylococcus 9 2.0 1350 23 AAS51837 Staphylococcus 9 2.0 1360 23 AAS51837 Staphylococ		30	6		216	23	AAS48942	Staphylococcus au
9 2.0 285 21 AAZ53158 Nedsseria menino 285 21 AAZ53158 Nedsseria menino 286 2.0 286 21 AAZ53159 Nedsseria menino 29 2.0 297 25 ABX87811 Corn ear-derive 29 2.0 297 25 ABX87421 Corn ear-derive 20 2.0 327 23 ABX8910 Staphylococcus 20 383 23 AAS50409 Staphylococcus 20 717 19 AAX53496 Staphylococcus 20 717 19 AAX53496 Staphylococcus 20 717 19 AAX53378 Staphylococcus 20 717 19 AAX53378 Staphylococcus 20 1188 22 AAH52631 Staphylococcus 20 137 23 AAS51837 Staphylococcus 20 1347 23 AAS51837 Staphylococcus 20 1347 23 AAS51837 Staphylococcus 20 1347 23 AAS54613 Staphylococcus 20 1347 23 AAS54613 Staphylococcus 20 1347 24 ABX51837 Staphylococcus 20 13447 24 ABX51837 Staphylococcus 20 13447 24 ABX51837 STAPHYLOCOCCUS 20 13447 24 ABX51837 STAPHYLOCOCCUS 2	9 2.0 285 21 AAZ53158 Nedsseria menino 28 2.0 285 21 AAZ53158 Nedsseria menino 28 2.0 286 25 ABX87811 Corn ear-derive 29 2.0 297 25 ABX87811 Corn ear-derive 29 2.0 297 25 ABX87421 Corn ear-derive 29 2.0 383 23 AAS4940 Staphylococcus 5 2.0 383 23 AAX5940 Staphylococcus 5 2.0 717 18 AAX5940 Staphylococcus 2.0 717 19 AAV5378 DNA encoding a 2.0 717 19 AAV5378 DNA encoding a 2.0 717 19 AAV5378 DNA encoding a 2.0 1188 22 AAH52631 Staphylococcus 3 2.0 1320 18 AAX28684 Staphylococcus 3 2.0 1320 18 AAX38684 Staphylococcus 5 2.0 1347 23 AAS51837 Staphylococcus 5 2.0 1347 23 AAS51837 Staphylococcus 5 2.0 1347 23 AAS51837 Staphylococcus 5 2.0 1350 23 AAS54613 Staphylococcus 5 2.0 1350 23 AAS54613 Staphylococcus 5 2.0 1350 AAS54613 AAS54		31	σ.		285	21	AAZ53157	Neisseria gonorri
9 2.0 297 28 AAX33139 Corn ear-derive 29 2.0 298 25 ABX87421 Corn ear-derive 29 2.0 297 23 AAS48910 Staphylococcus 20 38.7 23 AAS48910 Staphylococcus 2.0 38.7 23 AAS48910 Staphylococcus 2.0 38.7 23 AAS48960 Staphylococcus 2.0 717 18 AAY83287 DNA encoding a 2.0 717 18 AAY83287 DNA encoding a 2.0 717 18 AAY3378 Staphylococcus 2.0 1188 22 AA452631 Nucleotide seque 2.0 1347 23 AAS51837 Staphylococcus 3.2 AAS51837	9 2.0 297 28 ARX33139 Corn ear-derive 29 2.0 298 25 ABX87421 Corn ear-derive 29 2.0 298 25 ABX87421 Corn ear-derive 29 2.0 298 25 ABX87421 Corn ear-derive 29 2.0 387 23 AAS48910 Staphylococcus 383 23 AAS48910 Staphylococcus 20 717 18 AAR3327 DNA encoding a 2 0 717 18 AAR32378 DNA encoding a 2 0 717 18 AAY3378 DNA encoding a 2 0 1188 22 AAH52631 Nucleotide seque 2 0 1320 18 AAV3318 Staphylococcus 2 0 1347 23 AAS51837 Staphylococcus 2 0 1350 23 AAS51837 Staphylococcus 3 2.0 1350 23 AAS51837 Staphylococcus 3 2.0 1350 23 AAS51837 Staphylococcus 3 4275 standard; DNA; 1347 BP.  'EB-2002 (first entry)  'EB-2002 (first entry)	. , ,	27.0	on 0		285	21	AAZ53158	Neisseria mening
9 2.0 298 25 ABX87421 Corn ear-derive 9 2.0 327 23 AAS18910 Staphylococcus 9 2.0 387 23 AAS50409 Staphylococcus 9 2.0 485 23 AAS50409 Staphylococcus 9 2.0 717 18 AAT83927 DNA encoding a 9 2.0 717 19 AAV53378 DNA encoding a 9 2.0 717 19 AAV53378 Staphylococcus 9 2.0 1188 2 AAS5681 Staphylococcus 9 2.0 1347 23 AAS51837 Staphylococcus 9 2.0 1347 23 AAS51837 Staphylococcus 9 2.0 1347 23 AAS54613 Staphylococcus 9 2.0 1347 24 AAS54613 Staphylococcus 9 2.0 1347 BP.  ALIGNMENTS  HALIGNMENTS  #4275;  **EB-2002 (first entry)**  **Graphylococcus of the cellular proliferation protein #406.	9 2.0 298 25 ABX87421 Corn ear-derive 9 2.0 327 23 AAS48910 Staphylococcus 9 2.0 327 23 AAS48910 Staphylococcus 9 2.0 485 23 AAS50409 Staphylococcus 9 2.0 717 18 AAY83927 DNA encoding a 9 2.0 717 19 AAV53378 DNA encoding a 9 2.0 1188 22 AA452631 School of a 2.0 1188 22 AAY7391 School of a 2.0 1347 23 AAS54643 Staphylococcus 9 2.0 1350 23 AAS54613 Staphylococcus 9 2.0 1350 23 AAS54613 Staphylococcus 9 2.0 1350 23 AAS54613 Staphylococcus 9 2.0 1350 29 AAS54613 Staphylococcus 9 2.0 1350 29 AAS54613 Staphylococcus 9 2.0 1350 29 AAS54613 Staphylococcus 9 2.0 1350 20 AAS54613 AAS54613 AAS54613 Staphylococcus 9 2.0 1350 20 AAS54613 AA		34	nσ		202	720	ARX87811	Orn par-derived
9 2.0 327 23 AAS48910 Staphylococcus 9 2.0 387 23 AAS58409 Staphylococcus 9 2.0 486 22 AAS58409 Staphylococcus 9 2.0 717 18 AAT89927 Staphylococcus 9 2.0 717 18 AAT89327 Staphylococcus 9 2.0 717 19 AAV53378 Staphylococcus 9 2.0 1188 22 AA452631 S. epidermidis 9 2.0 1320 18 AAV74391 Staphylococcus 9 2.0 1347 23 AAS51837 Staphylococcus 9 2.0 1347 23 AAS54613 Staphylococcus 9 2.0 1347 BP.  ALIGNMENTS  4275 standard; DNA; 1347 BP.  **Graphylococcus Staphylococcus Staphylococcus Staphylococcus Staphylococcus Staphylococcus Staphylococcus Staphylococcus Staphylococcus Staphylococcus ALIGNMENTS  **ALIGNMENTS**  **ALIGNMEN	9 2.0 327 23 AAS48910 Staphylococcus 9 2.0 387 23 AAS580409 Staphylococcus 9 2.0 388 23 AAS48910 Staphylococcus 9 2.0 486 23 AAS48460 Staphylococcus 9 2.0 717 19 AAV53378 DNA encoding a 2.0 717 19 AAV53378 DNA encoding a 2.0 1242 20 AAX28684 Nucleotide sequence of 1320 18 AAV74391 Staphylococcus 9 2.0 1320 18 AAV74391 Staphylococcus 9 2.0 1347 23 AAS51837 Staphylococcus Staphylococcus 9 2.0 1347 23 AAS54613 Staphylococcus Staphylococcus 44275 standard; DNA; 1347 BP.  4275 standard; DNA; 1347 BP.  FBB-2002 (first entry)  FBB-2002 (first entry)		. 5			298	25	ABX87421	Corn ear-derived
9 2.0 383 23 AAS50409 Staphylococcus 9 2.0 485 23 AAS49460 Staphylococcus 9 2.0 485 23 AAS49460 Staphylococcus 9 2.0 717 19 AAV53378 DNA encoding a 9 2.0 717 19 AAV53378 Staphylococcus 9 2.0 1242 20 AAR52664 Nucleotide seque 9 2.0 1320 18 AAV74391 Staphylococcus 9 2.0 1347 23 AAS51837 Staphylococcus 9 2.0 1350 23 AAS54613 Staphylococcus 44275 standard; DNA; 1347 BP.  4275 standard; DNA; 1347 BP.  4275 standard; DNA; 1347 BP.	9 2.0 383 23 AAS50409 Staphylococcus 9 2.0 485 23 AAS50409 Staphylococcus 9 2.0 485 23 AAS49460 Staphylococcus 9 2.0 717 19 AAV53378 DNA encoding a 9 2.0 717 19 AAV53378 DNA encoding a 9 2.0 1242 20 AAX5864 Staphylococcus 9 2.0 1320 18 AAV74391 Staphylococcus 9 2.0 1347 23 AAS51837 Staphylococcus 9 2.0 1350 23 AAS51837 Staphylococcus 9 2.0 1350 23 AAS54613 Staphylococcus Staphylococcus 44275 standard; DNA; 1347 BP.  HEB-2002 (first entry)  FEB-2002 (first entry)		36	n 01		327	23	AAS48910	Staphylococcus an
9 2.0 485 23 AAS19460 Staphylococcus 9 2.0 717 18 AAT83927 DNA encoding a 9 2.0 717 19 AAV83378 DNA encoding a 9 2.0 717 19 AAV83378 DNA encoding a 9 2.0 1188 22 AAH52631 S. epidermid1s 9 2.0 1320 18 AAV28684 Staphylococcus 9 2.0 1347 23 AAS51837 Staphylococcus 9 2.0 1350 23 AAS51837 Staphylococcus ALIGNMENTS  4275 standard; DNA; 1347 BP.  4275: "EB-2002 (first entry) domonas aeruginosa DNA for cellular proliferation protein #406.	9 2.0 485 23 AAS19460 Staphylococcus 9 2.0 717 18 AAT83927 DNA encoding a 9 2.0 717 19 AAV83378 DNA encoding a 9 2.0 717 19 AAV83378 DNA encoding a 9 2.0 1188 22 AAH52631 S. epidermidis 9 2.0 1320 18 AAV38684 Staphylococcus 9 2.0 1347 23 AAS51837 Staphylococcus 9 2.0 1347 23 AAS51837 Staphylococcus 9 2.0 1350 23 AAS54613 Staphylococcus Staphylococcus ALIGNMENTS  4275 standard; DNA; 1347 BP.  **EB-2002 (first entry)**  **EB-2002 (first entry)**		37	6		383	23	AAS50409	
9 2.0 717 18 AAT83927 DNA encoding a 9 2.0 717 19 AAV53378 DNA encoding a 9 2.0 118 2 2 AAV5378 DNA encoding a 9 2.0 118 2 2 AAX28684 S. epidermidis 9 2.0 1342 20 AAX28684 Staphylococcus 9 2.0 1350 18 AAV74391 Staphylococcus 9 2.0 1350 23 AAS54613 Staphylococcus AALIGNMENTS  ALIGNMENTS  4275 standard; DNA; 1347 BP.  **Head of the control of the cont	9 2.0 717 18 AAV53327 DNA encoding a graph of the control of the c		38	<u>ი</u>		485	23	AAS49460	phylococcus
9 2.0 177 19 AAV53378 DNA encoding a 2.0 1188 2.3 AAH552631 S. epidermidis 9 2.0 1242 20 AAX28684 Nucleotide sequi 9 2.0 1320 18 AAV74391 Staphylococcus 9 2.0 1347 23 AAS51837 Staphylococcus 9 2.0 1350 23 AAS54613 Staphylococcus ALIGNMENTS  ALIGNMENTS  4275 standard; DNA; 1347 BP.  4275; "EB-2002 (first entry)  domonas aeruqinosa DNA for cellular proliferation protein #406.	9 2.0 177 19 AAV53378 5 DNA encoding a 2.0 178 22 AAAV53378 5 epidermidis 9 2.0 1242 20 AAX28684 Staphylococcus 9 2.0 1320 18 AAV74391 Staphylococcus 9 2.0 1347 23 AAS51837 Staphylococcus 5.0 1350 23 AAS54613 Staphylococcus 5.0 1347 29 AAS54613 Staphylococcus 5.0 1347 29 AAS54613 Staphylococcus 5.0 1350 23 AAS54613 Staphylococcus 5.0 1350 23 AAS54613 Staphylococcus 5.0 1350 2.0 1350 2.0 1350 2.0 1350 2.0 1347 BP.  4275 standard; DNA; 1347 BP.  4275; "EB-2002 (first entry)		99	σ.	•	717	18	AAT83927	encoding a
9 2.0 1188 22 AAN32631 S. epidermidis 9 2.0 1142 AAX28664 Nucleotide seque 9 2.0 1320 18 AAV74391 Staphylococcus 9 2.0 1347 23 AAS51837 Staphylococcus 9 2.0 1350 23 AAS54613 Staphylococcus ALIGNMENTS 4275 standard; DNA; 1347 BP. 4275; "EB-2002 (first entry) domonas aeruqinosa DNA for cellular proliferation protein #406.	9 2.0 1188 22 AAN12631 S.epidermidis 9 2.0 1142 20 AAN12631 Nucleotide seque 9 2.0 1320 18 AAV74391 Staphylococcus 9 2.0 1347 23 AAS51837 Staphylococcus 9 2.0 1350 23 AAS54613 Staphylococcus ALIGNMENTS ALIGNMENTS 4275 standard; DNA; 1347 BP.  18B-2002 (first entry) IGOMONOAS aeruginosa DNA for cellular proliferation protein #406.	•	) ·	ס ת		/1/	7 6	AAV533/8	encoding a
9 2.0 1320 18 AAVA391 Staphylococcus 9 2.0 1347 23 AAS51837 Staphylococcus 9 2.0 1350 23 AAS54613 Staphylococcus 14275 standard; DNA; 1347 BP. 14275; "EB-2002 (first entry)	9 2.0 1320 18 AAVA391 Staphylococcus 9 2.0 1347 23 AAS51837 Staphylococcus 9 2.0 1350 23 AAS54613 Staphylococcus staphylococcus staphylococcus ALIGNMENTS 4275 standard; DNA; 1347 BP.  **EB-2002 (first entry) domonas aeruginosa DNA for cellular proliferation protein #406.		+ c	ח מ		1242	7 0	AAK132031	pidermidis potido segu
9 2.0 1347 23 AAS51837 Staphylococcus 9 2.0 1350 23 AAS54613 Staphylococcus 9 2.0 1350 23 AAS54613 Staphylococcus ALIGNMENTS  ALIGNMENTS  4275 standard; DNA; 1347 BP.  14275;  188-2002 (first entry)  domonas aeruginosa DNA for cellular proliferation protein #406.	9 2.0 1347 23 AAS51837 Staphylococcus 9 2.0 1350 23 AAS51837 Staphylococcus ALIGNMENTS 44275 standard; DNA; 1347 BP. 18B-2002 (first entry) idomonas aeruginosa DNA for cellular proliferation protein #406.		7 ~	n o		1320	γ α	AAA26664 AAV74391	entine sed
9 2.0 1350 23 AAS54613 Staphylococcus ALIGNMENTS 4275 standard; DNA; 1347 BP.  188-2002 (first entry) domonas aeruginosa DNA for cellular proliferation protein #406.	9 2.0 1350 23 AAS54613 Staphylococcus ALIGNMENTS 4275 standard; DNA; 1347 BP.  188-2002 (first entry)  Gomenas aeruginosa DNA for cellular proliferation protein #406.		44	n o		1347	2 5	AAS51837	
ALIGNMENTS 4275 standard; DNA; 1347 BP. 4275; 'EB-2002 (first entry) domonas aeruginosa DNA for cellular proliferation protein	ALIGNMENTS 4275 standard; DNA; 1347 BP. 4275; 'EB-2002 (first entry) domonas aeruginosa DNA for cellular proliferation protein	`	. Z	0		1350	23	AAS54613	00
4275 standard; DNA; 1347 BP. 14275; EB-2002 (first entry) domonas aeruginosa DNA for cellular proliferation protein	14275 standard; DNA; 1347 BP. 14275; 'BB-2002 (first entry) domonas aeruginosa DNA for cellular proliferation protein							ALIGNMENTS	
.4275; .4275; .EB-2002 (first entry)	4275 standard; DNA; 1347 BP. 4275; 'EB-2002 (first entry) domonas aeruginosa DNA for cellular proliferation protein	RESUI	1						
AAS54275; 13-FEB-2002 (first entry) Pseudomonas aeruginosa DNA for cellular proliferation protein	AAS54275; 13-FEB-2002 (first entry) Pseudomonas aeruginosa DNA for cellular proliferation protein	AAS5	4275 AAS5	4275	andard		r	BP.	
13-FEB-2002 (first entry) Pseudomonas aeruginosa DNA for cellular proliferation protein	13-FEB-2002 (first entry) Pseudomonas aeruginosa DNA for cellular proliferation protein	ΧÃ	AAS	4275					
13-FEB-2002 (first entry) Pseudomonas aeruginosa DNA for cellular proliferation protein	13-FEB-2002 (first entry) Pseudomonas aeruginosa DNA for cellular proliferation protein	×	é	1014					
Pseudomonas aeruginosa DNA for cellular proliferation protein	Pseudomonas aeruginosa DNA for cellular proliferation protein	15 S	13-E	EB-2002			χ)		
1100 O 1 101 101 101 101 101 101 101 101		YY DE	Pseu	domonas		inosa L		or cellular prolifera	tion protein #406.

Antisense; ds; prokaryotic cellular proliferation gene; antibiotic; antibacterial; drug design. 

Pseudomonas aeruginosa

WO200170955-A2

```
1020
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         1080
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          1140
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         1200
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        120
                                                                                                                                 140
                                                                                                                                                                                                160
                                                                                                                                                                                                                              480
                                  300
                                                                                               360
                                                                                                                                                               420
                                                                                                                                                                                                                                                             180
                                                                                                                                                                                                                                                                                               540
                                                                                                                                                                                                                                                                                                                              200
                                                                                                                                                                                                                                                                                                                                                            900
                                                                                                                                                                                                                                                                                                                                                                                             220
                                                                                                                                                                                                                                                                                                                                                                                                                                                             240
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              260
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        780
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          840
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         320
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        340
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         360
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          380
                                                                                                                                                                                                                                                                                                                                                                                                                           999
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            720
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           280
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         300
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         900
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        960
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          400
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           420
                                                                                                                                                                                                                 LeuArgThrProAlaLeuValGlnAlaAlaAlaLysGlyValArgIleSerGlyAspIle
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           361 AGCACCGTGACCACCTGGTGGGGGGAAATGGCGGTGGCCGCGGGACAAGCGTGTCGCCGTC
                                                                                                                                                                                                                                                                                CTGCGCACCCCTGCGCTGGTACAGGCGCGCGCGAAAGGCGTGCGCATCTCCGGTGACGCTGACATC
                                                                    AspleuPheAlaArgGluAlaLysAlaProIleValAlaIleThrGlySerAsnAlaLys
                                                                                   SerThrvalThrThrLeuvalGlyGluwetalavalalaalaaspLysArgvalAlaval
                                                                                                                                                                                                                                                               LeuGlyLeuSerSerPheGlnLeuGluThrCysAspArgLeuAsnAlaGluValAlaThr
                                                                                                                                                                                                                                                                                                                               ValLeuAsnValSerGluAspH1sMetAspArgTyrAspGlyMetAlaAspTyrH1sLeu
                                                                                                                                                                                                                                                                                                                                                                                                              LeuAspGluAlaValArgGlnAlaAlaGluLeuAlaArgGluGlyAspAlaValLeuLeu
                                                                                                                                                                                                GlyGlyAsnLeuGlyThrProAlaLeuAspLeuLeuAlaAspAspIleGluLeuTyrVal
                                                                                                                                                                                                                                                                                                                                                                                              AlaLysHisArgIlePheArgGlyAlaArgGlnValValValAsnArgAlaAspAlaLeu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         AlaAlaLeuAlaLeuGlyHisAlaValGlyLeuProPheAspAlaMetLeuGlyAlaLeu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           LysAlaPheSerGlyLeuAlaHisArgCysGlnTrpValArgGluArgGlnGlyValSer
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          CTGGACGAAGCAGTCCGGCAGGCCGCCGAGCTGCCGCGAAGGCGATGCGGTGCTTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         AlaLysAlaValGluGluLeuAla,448
     81
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          381
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           1141
                                                                  101
                                                                                                  301
                                                                                                                                   121
                                                                                                                                                                                                141
                                                                                                                                                                                                                              421
                                                                                                                                                                                                                                                               161
                                                                                                                                                                                                                                                                                               481
                                                                                                                                                                                                                                                                                                                              181
                                                                                                                                                                                                                                                                                                                                                              541
                                                                                                                                                                                                                                                                                                                                                                                             201
                                                                                                                                                                                                                                                                                                                                                                                                                             601
                                                                                                                                                                                                                                                                                                                                                                                                                                                             221
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            661
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           721
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           261
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            781
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          281
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           841
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           301
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           901
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          1201
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           401
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         441
                              셤
                                                                  ò
                                                                                          셤
                                                                                                                                 à
                                                                                                                                                              g
                                                                                                                                                                                                                         g
                                                                                                                                                                                                                                                               õ
                                                                                                                                                                                                                                                                                            g
                                                                                                                                                                                                                                                                                                                          ò
                                                                                                                                                                                                                                                                                                                                                       g
                                                                                                                                                                                                                                                                                                                                                                                             à
                                                                                                                                                                                                                                                                                                                                                                                                                     원
                                                                                                                                                                                                                                                                                                                                                                                                                                                       ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           å
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       g
                                                                                                                                                                                                ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           å
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ŏ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ŏ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Ω
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           å
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       qq
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          à
                                                                                                                                                                                                                                                                                                                                                                                                    The invention relates to antisense inhibitors of genes essential to prokaryotic cellular proliferation, their use in identifying the genes, their use in the discovery of novel antibiotics, the essential genes themselves and the encoded proteins. The prokaryotes used are Escherichia coli, Staphylococcus aureus, Salmonella typhi, Klebsiella premoilae, Pseudomonas aeruqinosa and Enterococcus faccalis. The invention is also useful for the identification of potential new targets for antibiotic development. The antisense nucleic acids can also be used to antibiotic acids capable of binding to the expressed proteins, and to obtain antibodies capable of binding to the expressed proteins. The proteins can be used to screen compounds in rational drug discovery programmes. The antisense nucleic acid sequence is also useful to screen for homologous nucleic acid sequence is also useful to screen for homologous nucleic acids which are required for cell proliferation in a wide variety of organisms. The present sequence encodes an essential prokaryotic cellular proliferation protein.

Contact: The sequence data for this patent did not form part for the printed specification, but was obtained in electronic for the printed specification, but was obtained in electronic
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        240
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          40
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         80
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         20
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    SerLeuValArgTyrLeuAlaArgArgGlyLeuProPheAlaValValAspThrArgGlu
                                                                                                                                                                                                                                G;
                                                                                                                                                                                                                                Carr
                                                                                                                                                                                                                                                                                                                               of.
                                                                                                                                                                                                                                Ġ,
                                                                                                                                                                                                                                                                                                                          New polynucleotides for the identification and development antibiotics, comprise sequences of antisense nucleic acids
                                                                                                                                                                                                                                Trawick
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         other;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1347
448
0
0
0
0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Length:
Matches:
Conservative:
Mismatches:
Indels:
Gaps:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          0
                                                                                                                                                                                                                              'n
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       C; 453 G; 227 T;
                                                                                                                                                                                                                                Wall
                                                                                                                                                                                                                                                                                                                                                                        Claim 27; Seq ID No 7912; 511pp; English.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ftp.wipo.int/pub/published_pct_sequences
                                                                                                                                                                                                                              Zyskind JW,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       (1-1347)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       US-09-701-229-2 (1-448) x AAS54275
                                                                            20000S-206848P.
20000S-207727P.
20000S-242578P.
20000S-253625P.
20000S-257931P.
20010S-269308P.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     BP; 214 A; 453
                                  2001WO-US09180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    448.00
100.00%
100.00%
                                                                                                                                                                                                                             Ohlsen KL,
Xu HH;
                                                                                                                                                                                              (ELIT-) ELITRA PHARM INC
                                                                                                                                                                                                                                                                         WPI; 2001-611495/70.
P-PSDB; AAU36416.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Percent Similarity:
Best Local Similarity:
                                                                            23-MAY-2000; 2
26-MAY-2000; 2
23-OCT-2000; 2
27-NOV-2000; 2
22-DEC-2000; 2
16-FEB-2001; 2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Sequence 1347
                                21-MAR-2001;
                                                                                                                                                                                                                                            famamoto RT,
                                                                                                                                                                                                                             ď
                                                              21-MAR-2000;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Alignment Scores:
 27-SEP-2001
                                                                                                                                                                                                                             Haselbeck
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      21
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       41
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Query Match
DB:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Score:
PRANTAL PRANTA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      음
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ద
```

ò

à

80

```
1071 GGTGCCGACATCGACGGCAAGCTGGTGCTGCTCGCCGGCGGAGACGGCAAGGGCGCGCGAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               1191 GACGCCGGGCTGATTGCCCAGGCACTGGGCAACGCGGTACCGCTGGTGCGCGTGCGCAACG
AACCCGCCGGAGCTGGCCACCCTGCGTGCCCAGTATCCGCAGGTGGAAGTGCGGC
                                                                                                                                                                                   AlaLySHisArgIlePheArgGlyAlaArgGlnValValValAsnArgAlaAspAlaLeu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 PheLysAlaPheGlyLeuIleGluGluAspGlyGlnLysTrpLeuAlaPheGlnPheAsp
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        TyrTyrAspAspSerLysAlaThrAsnValGlyAlaAlaLeuAlaAlaIleGluGlyLeu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           GlyAlaAspIleAspGlyLysLeuValLeuLeuAlaGlyGlyAspGlyLysGlyAlaAsp
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    LeuAspGluAlaValArgGlnAlaAlaGluLeuAlaArgGluGlyAspAlaValLeuLeu
                               GluLeuAspAlaGluPheLeuCysSerAlaArgGluLeuTyrValSerProGlyLeuSer
                                                                 GAACTCGACGCCGAGTTCCTCTGCTCCGCCCGCGAACTCTATGTCAGCCCCGGGTTGTCG
                                                                                                                                                                     AspLeuPheAlaArgGluAlaLysAlaProIleValAlaIleThrGlySerAsnAlaLys
                                                                                                                                                                                                                                     SerThrValThrThrLeuValGlyGluMetAlaValAlaAlaAspLysArgValAlaVal
                                                                                                                                                                                                                                                        GlyGlyAsnLeuGlyThrProAlaLeuAspLeuLeuAlaAspAspIleGluLeuTyrVal
                                                                                                                                                                                                                                                                                                                                          GGCGGCAACCTCGGCACCCCGGCGCTCGACCTGGCCGACGACATCGAGCTGTACGTG
                                                                                                                                                                                                                                                                                                                                                                          LeuGluLeuSerSerPheGlnLeuGluThrCysAspArgLeuAsnAlaGluValAlaThr
                                                                                                                                                                                                                                                                                                                                                                                            GCCAAGCACCGGATCTTCCGCGGTGCCCGCCAGGTCGTGGTGAATCGCGCCGGATGCCCTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ThrArgProLeuIleAlaAspThrValProCysTrpSerPheGlyLeuAsnLysProAsp
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  PheHisAspLeuArgGluProValAlaArgPheCysArgAlaValValLeuLeuGlyArg
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  AspalaGlyLeuIleAlaGlnAlaLeuGlyAsnAlaValProLeuValArgValAlaThr
                                                                                                                                                                                                                                                                                                                          651 (
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               711
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  831
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               771
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     1251
                                                                                                                                                                                                                                                                                                      141
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  261
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               361
                               61
                                                                                                   81
                                                                                                                                 291
                                                                                                                                                                                                                                                                                                                                        471
                                                                                                                                                                                                                                                                                                                                                                        161
                                                                                                                                                                                                                                                                                                                                                                                                          531
                                                                                                                                                                                                                                                                                                                                                                                                                                            181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                            591
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             201
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         321
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             341
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  381
                                                                 231
                                                                                                                                                                     101
                                                                                                                                                                                                   351
                                                                                                                                                                                                                                     121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               221
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      401
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                g
                                                                                                                                                                                                   g
                                                                                                                                                                                                                                                                 g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           qq
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             qq
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Qγ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    qq
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    δ
                              ò
                                                               g
                                                                                                   à
                                                                                                                               g
                                                                                                                                                                 ò
                                                                                                                                                                                                                                     ò
                                                                                                                                                                                                                                                                                                      ò
                                                                                                                                                                                                                                                                                                                                     g
                                                                                                                                                                                                                                                                                                                                                                      δ
                                                                                                                                                                                                                                                                                                                                                                                                        g
                                                                                                                                                                                                                                                                                                                                                                                                                                            ŏ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                          d
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             οy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Óγ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                110
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  170
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          This sequence represents the MurD gene from Pseudomonas aeruginosa. MurD is an enzyme involved in blosynthesis of bacterial cell walls, so inhibiting it inhibits bacterial growth (by preventing MurD-catalyzed addition of D-glutemate to an alanyl residue in the UDP-N-acetylmuramyl-L-alanine precursor). Cells that express murD protein can be used: (a) to identify inhibitors of MurD, and (b) for recombinant production of MurD, which is used to raise specific antibodies (potential therapeutic inhibitors). Fragments of the murD gene can be used as probes and primers to detect MurD-encoding sequences (c) in the control of MurD genes or to detect MurD-encoding sequences continued the control of MurD genes or to detect MurD-encoding sequences of the following murD genes or to detect P, detect properties of the following murD genes or to detect properties of the following murD genes or to detect properties of the following murD genes or to detect properties of the following murD genes or to detect properties of the following murD genes or to detect properties of the following murD genes or to detect properties of the following murD genes or to detect properties of the following murD genes or to detect properties of the following murD genes or to detect properties of the following murD genes or to detect properties of the following murD genes or to detect properties of the following murD genes or to detect properties of the following murD genes or to detect properties of the following murD genes or to detect properties of the following murD genes or to detect properties of the following murD genes or to detect properties of the following murD genes or to detect properties of the following murD genes or to detect properties of the following murD genes or to detect properties of the following murD genes or to detect properties of the following murD genes or to detect properties of the following murD genes or to detect properties or to detect properties or to detect properties or to detect properties or to detect properties
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    (to identify polymorphic murD genes or to detect P. aeruginosa), also as antisense modulators. The murD inhibitors are useful for treating or preventing bacterial infections, including those caused by P. aeruginosa.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                20
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  40
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              {\tt MetSerLeuIleAlaSerAspHisPheArgIleValGlyLeuGlyLySerGlyMet}
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                AsnProProGluLeuAlaThrLeuArgAlaGlnTyrProGlnValGluValArgCysGly
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               the MurD protein of Pseudomonas aeruginosa, inhibitors -
                                                                                                                                                                                                                      D-glutamate;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      T; 0 other;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        1450
448
0
0
0
                                                                                                                                                                                                                 cell wall; biosynthesis; inhibitor;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Length:
Matches:
Conservative:
Mismatches:
Indels:
                                                                                                                                                                                                                                     UDP-N-acetylmuramyl-L-alanine precursor; ds.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Sequence 1450 BP; 227 A; 487 C; 487 G; 249
              GCCAAAGCCGTAGAGGAGCTAGCG 1344
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           US-09-701-229-2 (1-448) x AAZ47131 (1-1450)
                                                                                                                                                                                     Pseudomonas aeruginosa murD gene.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Claim 4; Page 8-9; 35pp; English,
                                                                                 BP,
                                                                               AAZ47131 standard; DNA; 1450
                                                                                                                                                                                                                                                                                                                                                                        99WO-US11585
                                                                                                                                                                                                                                                                                                                                                                                                        98US-0087308
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      448.00
100.00%
100.00%
                                                                                                                                                   (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             nucleic acid encoding
                                                                                                                                                                                                                                                                                                                                                                                                                                                                          El-Sherbeini M, Azzolina
                                                                                                                                                                                                                                                                      Pseudomonas aeruginosa
                                                                                                                                                                                                                                                                                                                                                                                                                                          (MERI ) MERCK & CO INC.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          WPI; 2000-072548/06.
P-PSDB; AAY56047.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Percent Similarity:
Best Local Similarity:
Query Match:
                                                                                                                                                                                                                   bacterial
                                                                                                                                                                                                                                                                                                   W09961050-A1.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Alignment Scores:
Pred. No.:
                                                                                                                                                                                                                                                                                                                                                                        26-MAY-1999;
                                                                                                                                                                                                                                                                                                                                                                                                        29-MAY-1998;
                                                                                                                                                   28-MAR-2000
                                                                                                                                                                                                                                                                                                                                      02-DEC-1999
                                                                                                                 AAZ47131;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Н
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              51
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                21
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  111
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    41
               1321
                                                                                                                                                                                                                   MurD;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             nsed
                                                                 AAZ47131
                                               RESULT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Score:
                                                                                                 셤
               g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ŏ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ô
```

1010

1070

340

1190

400

420

380

1130

360

Human; chromosome mapping; gene mapping; gene therapy; forensic; food supplement; medical imaging; diagnostic; genetic disorder; ss.

DNA encoding novel human diagnostic protein #25062.

(first entry)

13-FEB-2002

AAS89258;

AAS89258 standard; cDNA; 1080 BP

4

셤

ð g ð

```
AAS89258
                                      The present invention relates to a Moraxella catarrhalis genomic library comprising of a combination of 41 nucleic acid molecules (see AAPZ8514-AAFZ8554). The library has a number of uses described in the specification e.g. is useful for aidentifying diagnostic and therapeutic compositions. M. catarrhalis (Branhamella catarrhalis) is a large acrobic, gram-negative diplococcus, normally found among the bacterial flora of human upper airways. M. catarrhalis is known to cause acute, localised infections such as ottis media, sinusitis and bronchopulmonary infection and life-threatening, systemic diseases including endocarditis
                                                                                                                                                                                                                                                            Genomic library; bacteria; human upper airway; otitis media; sinusitis; bronchopulmonary; endocarditis; meningitis; ss.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Genomic library for identifying diagnostic and therapeutic compositions, and for identifying virulence factors, regulatory elements and drug targets, comprises Moraxella catarrhalis nucleic
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Sequence 96109 BP; 28783 A; 18910 C; 20341 G; 28075 T; 0 other;
                                                                               Claim 1; Page 345-368; 545pp; English.
                                                               AlaLysAlaValGluGluLeuAla 448
                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Berg KL;
                                                                                                                                                   ВР
                                                                                                                                                 AAF28548 standard; DNA; 96109
                                                                                                                                                                                                                                                                                                                                                                                     16-JUN-2000; 2000WO-US16649.
                                                                                                                                                                                                                                                                                                                                                                                                                 99US-0140121.
                                                                                                                                                                                                                                                                                                                                                                                                                                            (INCY-) INCYTE GENOMICS INC.
                                                                                                                                                                                                       (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Lagace RE, Patterson C,
                                                                                                                                                                                                                                                                                                      Moraxella catarrhalis,
                                                                                                                                                                                                                                  Genomic fragment #35.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                WPI; 2001-041427/05.
                                                                                                                                                                                                                                                                                                                                WO200078968-A2.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 and meningitis
                                                                                                                                                                                                                                                                                                                                                                                                                 18-JUN-1999;
                                                                                                                                                                                                       04-APR-2001
                                                                                                                                                                                                                                                                                                                                                           28-DEC-2000
                                                               441
                                                                                                                                                                           AAF28548;
                                                                                                                      RESULT
```

H A PART A PART

New isolated polynucleotide and encoded polypeptides, useful in diagnostics, forensics, gene mapping, identification of mutations responsible for genetic disorders or other traits and to assess

biodiversity

Tang YT;

WPI; 2001-639362/73. Drmanac RT, L1u C, (HYSE-) HYSEQ INC

P-PSDB; ABG25071

30-MAR-2001; 2001WO-US08631 31-MAR-2000; 2000US-0540217 23-AUG-2000; 2000US-0649167

WO200175067-A2. Homo saplens.

11-OCT-2001.

```
The invention relates to isolated polynucleotide (I) and polypeptide (II) sequences. (I) is useful as hybridisation probes, polymerase chain reaction (PCR) primers, oligomers, and for chromosome polymerase chain reaction (PCR) primers, oligomers, and for chromosome and gene mapping, and in recombinant production of (II). The polynucleotides are also used in diagnostics as expressed sequence tags for identifying expressed genes. (I) is useful in gene therapy techniques to restore normal activity of (II) or to treat disease states involving cuantitating a polypeptide in tissue, as molecular weight markers and as a food supplement. (II) and its binding partners are useful in medical imaging of sites expressing (II). (I) and (II) are useful for treating disorders involving aberrant protein expression or biological activity. The polypeptide and polynucleotide sequences have applications in diagnostics, forensics, gene mapping, identification of mutations and application of propertical sequences are useful.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       and to produce other types of data and products dependent on DNA and amino acid sequences. AAS64197-AAS94564 represent novel human diagnostic coding sequences of the invention.

Note: The sequence data for this patent did not appear in the printed specification, but was obtained in electronic format directly from WIPO at ftp.wipo.int/pub/published_pct_sequences.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Sequence 1080 BP; 267 A; 253 C; 299 G; 261 T; 0 other;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     1080
14
0
0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Length:
Matches:
Conservative:
Mismatches:
Indels:
Claim 1; SEQ ID No 25062; 103pp; English.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Gaps:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       14.00
100.00%
100.00%
3.12%
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         0.00104
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Best Local Similarity:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Percent Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Alignment Scores:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Query Match:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Pred. No.:
```

157 GluLeuTyrValLeuGluLeuSerSerPheGlnLeuGluThr 170

õ

RESULT

ò 셤

US-09-701-229-2 (1-448) x AAF28548 (1-96109)

0000

Conservative: Mismatches: Indels:

1.02e-06 19.00 100.008 100.008 4.248

Percent Similarity: Best Local Similarity: Query Match:

Alignment Scores:

Pred.

Length: Matches:

US-09-701-229-2 (1-448) x AAS89258 (1-1080)

157 GluLeuTyrValLeuGluLeuSerSerPheGlnLeuGluThr 170

22 GAACTGTACGTGGAACTGTCGAGCTTCCAGCTGGAAACC

AAS90166 standard; cDNA; 1080 BP

13-FEB-2002 (first entry)

AAS90166;

63

```
g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         The invention relates to isolated polynucleotide (I) and polypeptide (II) sequences. (I) is useful as hybridisation probes, polypeptide (II) sequences. (I) is useful as hybridisation probes, and gene mapping, and in recombinant production of (II). The and gene mapping, and in recombinant production of (II). The polymucleotides are also used in diagnostics as expressed sequence tags for identifying expressed genes. (I) is useful in gene therapy techniques to restore normal activity of (II) or to treat disease states involving (II). (II) and its bidding partners are useful in medical imaging of sites expressing (II). (I) and (II) are useful in medical imaging of sites expressing (II). (I) and (II) are useful for treating disorders involving aberrant protein expression or biological activity. The polypeptide and polynucleotide sequences have applications in diagnostics, forensics, gene mapping, identification of mutations cresponsible for genetic disorders or other traits to assess biodiversity and to produce other types of data and products dependent on DNA and complements of the invention of diagnostic coding sequences of the invention of the printed coding sequences of the invention of the printed coding sequences of the invention of the printed coding sequence data for this patent did not appear in the printed coding sequence data for this patent did not appear in the printed coding sequences.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Human; chromosome mapping; gene mapping; gene therapy; forensic; food supplement; medical imaging; diagnostic; genetic disorder; ss.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   New isolated polynucleotide and encoded polypeptides, useful in diagnostics, forensics, gene mapping, identification of mutations responsible for genetic disorders or other traits and to assess
GAACTGTACGTGCTGGAACTGTCGAGCTTCCAGCTGGAAACC 63
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Sequence 1080 BP; 267 A; 253 C; 299 G; 261 T; 0 other;
                                                                                                                                                                                                                                                                                                                                                                                                                                           DNA encoding novel human diagnostic protein #25605.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ftp.wipo.int/pub/published_pct_sequences
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Claim 1; SEQ ID No 25605; 103pp; English.
                                                                                                                                                                       AAS89801 standard; cDNA; 1080 BP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Tang YT;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    30-MAR-2001; 2001WO-US08631.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        31-MAR-2000; 2000US-0540217.
23-AUG-2000; 2000US-0649167.
                                                                                                                                                                                                                                                                                                                                                       (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Drmanac RT, Liu C,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          WPI; 2001-639362/73.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              (HYSE-) HYSEQ INC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        P-PSDB; ABG25614.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    WO200175067-A2.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Homo sapiens.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   biodiversity
                                                                                                                                                                                                                                                                                                                                                       13-FEB-2002
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Alignment Scores:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            11-OCT-2001.
                                                                                                                                                                                                                                                               AAS89801;
                                                                              RESULT 5
```

```
polynucleotides are also used in diagnostics as expressed sequence tags for identifying expressed genes. (1) is useful in gene therapy techniques to restore normal activity of (II) or to treat disease states involving (II). (II) is useful for generating antibodies against it, detecting or quantitating a polypeptide in tissue, as molecular weight markers and as food supplement. (II) and its binding partners are useful in medical imaging of sites expressing (II). (I) and (II) are useful for treating disorders involving aberrant protein expression or biological activity. The polypeptide and polypucleotide sequences have applications in diagnostics, forensics, gene mapping, identification of mutations responsible for genetic disorders or other traits to assess biodiversity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Note: The sequence data for this patent did not appear in the printed specification, but was obtained in electronic format directly from WIPO
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          The invention relates to isolated polynucleotide (I) and polypeptide (II) sequences. (I) is useful as hybridisation probes, polymerase chain reaction (PCR) primers, oligomers, and for chromosome and gene mapping, and in recombinant production of (II). The
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              and to produce other types of data and products dependent on DNA and amino acid sequences. AAS64197-AAS94564 represent novel human diagnostic coding sequences of the invention.
                                                                                                                 Human; chromosome mapping; gene mapping; gene therapy; forensic; food supplement; medical imaging; diagnostic; genetic disorder; ss.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             New isolated polynucleotide and encoded polypeptides, useful in diagnostics, forensics, gene mapping, identification of mutations responsible for genetic disorders or other traits and to assess biodiversity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Sequence 1080 BP; 267 A; 253 C; 299 G; 261 T; 0 other;
                                                                          DNA encoding novel human diagnostic protein #25970.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Conservative:
Mismatches:
Indels:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     at ftp.wipo.int/pub/published_pct_sequences
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Length:
Matches:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Claim 1; SEQ ID No 25970; 103pp; English
                                                                                                                                                                                                                                                                                                                                                                                                                                      Tang YT;
                                                                                                                                                                                                                                                                                               30-MAR-2001; 2001WO-US08631.
                                                                                                                                                                                                                                                                                                                                     31-MAR-2000; 2000US-0540217.23-AUG-2000; 2000US-0649167.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         14.00
100.00%
100.00%
3.12%
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      0.00104
                                                                                                                                                                                                                                                                                                                                                                                                                                                                         WPI; 2001-639362/73.
P-PSDB; ABG25979.
                                                                                                                                                                                                                                                                                                                                                                                                                                      Drmanac RT, Liu C,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Percent Similarity:
Best Local Similarity:
                                                                                                                                                                                                                                                                                                                                                                                               (HYSE-) HYSEQ INC
                                                                                                                                                                                                                 WO200175067-A2.
                                                                                                                                                                             Homo sapiens.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 biodiversity
                                                                                                                                                                                                                                                        11-OCT-2001.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Query Match:
```

Length:
Matches:
Conservative:
Mismatches:
Indels:
Gaps:

0.00104 14.00 100.008 100.008 3.128

Best Local Similarity:

Percent Similarity:

Score:

US-09-701-229-2 (1-448) x AAS89801 (1-1080)

```
Sequence 1317 BP; 294 A; 323 C; 400
                                                 Query Match:
Pred. No.:
                                                                                                                                                                           AAH81460
                                                                                                                                                               RESULT
                                                                                                              ò
                                                                                                                                                                                                                                                                                                   The invention relates to antisense inhibitors of genes essential to prokaryotic cellular proliferation, their use in identifying the genes, their use in the discovery of novel antibiotics, the essential genes themselves and the encoded proteins. The prokaryotes used are secretarian coli, Staphylococcus aureus, Salmonella typhi, Klebsiella pneumonlae, Pseudomonas aeruginosa and Enterococcus faccalis. The proteins also useful for the identification of potential new targets invention is also useful for the identification of potential new targets of antibiotic development. The antisense nucleic acids can also be used to force of the proteins can be used to screen compounds in rational drug discovery programmes. The antisense nucleic acid sequence is also useful to screen for homologous nucleic acids which are required for cell proliferation in casential prokaryotic cellular proliferation protein.

Companies are acids which are required for cell proliferation in casential prokaryotic cellular proliferation protein.

Companies are specification, but was obtained in electronic
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       GJ;
                                                                                                                                                                                            Haemophilus influenzae DNA for cellular proliferation protein #235.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Carr
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           New polynucleotides for the identification and development of antibiotics, comprise sequences of antisense nucleic acids -
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Trawick JD,
                                              157 GluLeuTyrValLeuGluLeuSerSerPheGlnLeuGluThr 170
                                                                                                                                                                                                                      Antisense; ds; prokaryotic cellular proliferation gene; antibiotic; antibacterial; drug design.
                                                           22 GAACTGTACGTGCTGGAACTGTCGAGCTTCCAGCTGGAAACC 63
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Sequence 1314 BP; 403 A; 214 C; 294 G; 403 T; 0 other;
0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Wall
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Claim 27; Seq ID No 7090; 511pp; English.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ftp.wipo.int/pub/published_pct_sequences
 Gaps:
                      US-09-701-229-2 (1-448) x AAS90166 (1-1080)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    2yskind JW,
                                                                                                                       AAS53453 standard; DNA; 1314 BP
                                                                                                                                                                                                                                                                                                                                                                      2000US-206848P.
2000US-207727P.
2000US-242578P.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      directly from WIPO at
                                                                                                                                                                                                                                                                                                                                  21-MAR-2001; 2001WO-US09180
                                                                                                                                                                                                                                                                                                                                                                                                            2000US-253625P
                                                                                                                                                                                                                                                                                                                                                                                                                                     2001US-269308P
                                                                                                                                                                         (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Ohlsen KL,
                                                                                                                                                                                                                                                                                                                                                                                                                                                            (ELIT-) ELITRA PHARM INC.
                                                                                                                                                                                                                                                            Haemophilus influenzae
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     WPI; 2001-611495/70.
P-PSDB; AAU35594.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Xu HH
                                                                                                                                                                                                                                                                                  WO200170955-A2.
                                                                                                                                                                                                                                                                                                                                                                                               23-OCT-2000;
27-NOV-2000;
22-DEC-2000;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Yamamoto RT,
                                                                                                                                                                                                                                                                                                                                                                        23-MAY-2000;
26-MAY-2000;
                                                                                                                                                                                                                                                                                                                                                                                                                                     16-FEB-2001;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Haselbeck R,
                                                                                                                                                                                                                                                                                                                                                           21-MAR-2000;
                                                                                                                                                                       13-FEB-2002
                                                                                                                                                                                                                                                                                                           27-SEP-2001
                                                                                                                                                AAS53453;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Format
                                                                                                          AAS53453
                                                                                                                                                 ð
                                                                       a
```

```
The present invention describes a purified or isolated nucleic acid sequence (I) consisting essentially of one of the 93 nucleotide sequences given in AAH81202 to AAH81294, where expression of the nucleic acid in a microorganism is capable of inhibiting proliferation of a microorganism. (I) have antibacterial and antibiotic activities, and can be used in gene therapy. Expression of (I) in a microorganism inhibits proliferation of the microorganism, of the manufactured activity or level of a gene product required for reducing the activity or level of a gene product required for proliferation of a microorganism in a subject, specifically humans. The nucleic acids that inhibit bacterial growth or proliferation can be used as antisense therapeutics for Killing bacteria. In addition to therapeutic applications, the nucleic acid sequences complementary to
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          For example, nucleic acid probes complementary to proliferation-required sequences that are specific for particular species of microorganisms can be used as probes to identify particular microorganism species in clinical specimens. AnHB1295 to AAHB1487 encode the Escherichia coli proteins given in AAG98239 to AAG98431, and AAHB448B to AAHB1491 represent oligonucleotides, which are used in the exemplification of the
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               sequences required for proliferation can be used as diagnostic tools
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Escherichia coli protein encoding nucleotide sequence SEQ ID NO:259.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Novel nucleic acids encoding proteins required for Escherichia coli proliferation, useful for screening for antimicrobial agents -
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Escherichia coli; identification; proliferation; microorganism; antimicrobial; antibacterial; antibiotic; gene therapy; diagnosis; bacterial growth inhibition; ds.
                                                                                                                                                                                                                                                                                             1314
14
0
0
0
                                                            Conservative:
Mismatches:
Indels:
   Length:
Matches:
                                                                                                                                                                    Gaps:
                                                                                                                                                                                                                                US-09-701-229-2 (1-448) x AAS53453 (1-1314)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Claim 9; Page 388-389; 596pp; English.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  2yskind JW;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         AAH81460 standard; DNA; 1317 BP.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      19-DEC-2000; 2000WO-US34419.
                                    14.00
100.00%
100.00%
3.12%
23
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      99US-0173005
      0.00125
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      (ELIT-) ELITRA PHARM INC.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Forsyth RA, Ohlsen KL,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              WPI; 2001-457376/49.
                                                         Percent Similarity:
Best Local Similarity:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         present invention.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Escherichia coli.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             P-PSDB; AAG98404
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          WO200148209-A2.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  23-DEC-1999;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     21-SEP-2001
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          05-JUL-2001.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         AAH81460;
```

G; 300 T; 0 other;

Alignment Scores:

Alignment Scores:

ò

```
ftp.wipo.int/pub/published_pct_sequences.
                                                                                                                                                                                                                                       AAS56341
                                                                                                                                                                                                                                                                                      prokaryotic cellular proliferation, their use in identifying the genes, their use in the discovery of novel antibiotics, the essential genes themselves and the discovery of novel antibiotics, the essential genes themselves and the encoded proteins. The prokaryotes used are beneather only. Staphylococcus aucres, Salmonella typhi, Klebsiella neumoniae, Pseudomonas aeruginosa and Enterococcus faccalis. The invention is also useful for the identification of potential new targets for antibiotic development. The antisense nucleic acids can also be used to antibiotic development. The antisense nucleic acids can also be used to obtain antibodies capable of binding to the expressed proteins. The proteins can be used to screen compounds in rational drug discovery programmes. The antisense nucleic acid sequence is also useful to screen for homologous nucleic acids which are required for cell proliferation in a wide variety of organisms. The present sequence encodes an essential prokaryotic cellular proliferation protein.

Note: The sequence data for this patent did not form part for the printed specification, but was obtained in electronic format directly from WIPO at
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   GJ;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   The invention relates to antisense inhibitors of genes essential to
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Carr
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          of
-
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Trawick JD,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        New polynucleotides for the identification and development antibiotics, comprise sequences of antisense nucleic acids
                                                                                                                         157 GluLeuTyrValLeuGluLeuSerSerPheGlnLeuGluThr 170
                                                                                                                                                                                                                                                                                   Antisense; ds; prokaryotic cellular proliferation gene; antibiotic; antibacterial; drug design.
                                                                                                                                                                                                                                                           E. coli DNA for cellular proliferation protein #17.
Length:
Matches:
Conservative:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Wall D,
                                      Mismatches:
                                                Indels:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Claim 27; Seg ID No 5932; 511pp; English.
                                                              Gaps:
                                                                                    US-09-701-229-2 (1-448) x AAH81460 (1-1317)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Zyskind JW,
                                                                                                                                                                                      BP.
                                                                                                                                                                                                                                                                                                                                                                                                                                     2000US-206848P.
2000US-207727P.
2000US-242578P.
2000US-253625P.
                                                                                                                                                                                  AAS52295 standard; DNA; 1317
                                                                                                                                                                                                                                                                                                                                                                                                 21-MAR-2001; 2001WO-US09180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   2000US-257931P
2001US-269308P
           14.00
100.00%
100.00%
3.12%
                                                                                                                                                                                                                                                                                                                                                                                                                        2000US-191078P
                                                                                                                                                                                                                                    (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Ohlsen KL,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        (ELIT-) ELITRA PHARM INC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Xu HH;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    WPI; 2001-611495/70.
                        Percent Similarity:
Best Local Similarity:
                                                                                                                                                                                                                                                                                                                         Sscherichia coli.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                P-PSDB; AAU34436
                                                                                                                                                                                                                                                                                                                                                WO200170955-A2.
                                                                                                                                                                                                                                                                                                                                                                                                                                      23-MAY-2000;
26-MAY-2000;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   22-DEC-2000;
16-FEB-2001;
                                                                                                                                                                                                                                    13-FEB-2002
                                                                                                                                                                                                                                                                                                                                                                                                                         21-MAR-2000;
                                                                                                                                                                                                                                                                                                                                                                                                                                                              23-OCT-2000;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                        27-NOV-2000;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Haselbeck R,
                                                                                                                                                                                                                                                                                                                                                                        27-SEP-2001.
                                                                                                                                                                                                             AAS52295;
                                                                                                                                  457
                                                Query Match:
 Мо.:
                                                                                                                                                                         AAS5229
                                                                                                                                                             RESULT
 Pred.
```

```
to identify proteins used in proliferation, to express these proteins, and to obtain antibodies capable of binding to the expressed proteins. The proteins can be used to screen compounds in rational drug discovery programmes. The antisense nucleic acid sequence is also useful to screen for homologous nucleic acids which are required for cell proliferation in
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    The invention relates to antisense inhibitors of genes essential to prokaryotic cellular proliferation, their use in identifying the genes, their use in the discovery of novel antibiotics, the essential genes themselves and the encoded proteins. The prokaryotes used are Escherichia coll, Staphylococcus aureus, Salmonella typhi, Rlebsiella pneumoniae, Pseudomonas aeruginosa and Enterococcus facealis. The invention is also useful for the identification of potential new targets for antibiotic development. The antisense nucleic acids can also be used
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Trawick JD, Carr GJ;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      New polynucleotides for the identification and development of antibiotics, comprise sequences of antisense nucleic acids -
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Salmonella typhi DNA for cellular proliferation protein #374.
                                                                                                                                                                                                                                                                                                                   157 GluLeuTyrValLeuGluLeuSerSerPheGlnLeuGluThr 170
                                                                                                                                                                                                                                                                                                                                                 Antisense; ds; prokaryotic cellular proliferation gene; antibiotic; antibacterial; drug design.
Sequence 1317 BP; 294 A; 323 C; 400 G; 300 T; 0 other;
                                                                               1317
114
0
0
0
                                                                                                                           Conservative:
Mismatches:
Indels:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Ohlsen KL, Zyskind JW, Wall D,
                                                                                                        Matches:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Claim 27; Seq ID No 9978; 511pp; English.
                                                                                                                                                                                                             Gaps:
                                                                                                                                                                                                                                                               JS-09-701-229-2 (1-448) x AAS52295 (1-1317)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                               AAS56341 standard; DNA; 1317 BP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        2000US-253625P.
2000US-257931P.
2001US-269308P.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     2000US-191078P.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    21-MAR-2001; 2001WO-US09180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 2000US-206848P
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            2000US-207727P
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     2000US-242578P
                                                                                                     14.00
100.00%
100.00%
3.12%
                                                                            0.00126
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     13-FEB-2002 (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   (ELIT-) ELITRA PHARM INC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Xu HH;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 WPI; 2001-611495/70.
                                                                                                                                                            Best Local Similarity:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Salmonella typhi.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                P-PSDB; AAU38482.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              40200170955-A2.
                                                                                                                                 Percent Similarity:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Haselbeck R,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Yamamoto RT,
                                                      Alignment Scores:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     21-MAR-2000;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  23-OCT-2000;
27-NOV-2000;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      22-DEC-2000;
16-FEB-2001;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              23-MAY-2000;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            26-MAY-2000;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  27-SEP-2001
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    AAS56341;
                                                                                                                                                                                                                                                                                                                                                                       457
                                                                                                                                                                                  Query Match:
```

diagnostics, forensics, gene mapping, identification of mutations in responsible for genetic disorders or other traits to assess biodiversity and to produce other types of data and products dependent on DNA and amino acid sequences. AAS64197-AAS94564 represent novel human diagnostic coding sequences of the invention.

Note: The sequence data for this patent did not appear in the printed specification, but was obtained in electronic format directly from WIPO at ftp.wipo.int/pub/published\_pct\_sequences.

Sequence 2058 BP; 496 A; 526 C; 574 G; 462 T; 0 other

polypeptide and polynucleotide sequences have applications in

```
88888888888888
                                                                                                                                                                                                                                                                                                                                                                                               셤
                                                                                                                                                                                                                                                                                                                                                               ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        The invention relates to isolated polynucleotide (I) and polypeptide (II) sequences. (I) is useful as hybridisation probes, polymersae chain reaction (PCR) primers, oligomers, and for chromosome and gene mapping, and in recombinant production of (II). The polynucleotides are also used in diagnostics as expressed sequence tags for identifying expressed genes. (I) is useful in gene therapy techniques to restore normal activity of (II) or to treat disease states involving (II). (II) is useful for generating antibodies against it, detecting or quantitating a polypeptide in tissue, as molecular weight markers and as a food supplement. (II) and its binding partners are useful in medical imaging of sites expressing (II). (I) and (II) are useful for treating disorders involving aberrant protein expression or biological activity.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Human; chromosome mapping; gene mapping; gene therapy; forensic;
food supplement; medical imaging; diagnostic; genetic disorder; ss.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              New isolated polynucleotide and encoded polypeptides, useful in diagnostics, forensics, gene mapping, identification of mutations responsible for genetic disorders or other traits and to assess
a wide variety of organisms. The present sequence encodes an essential prokaryotic cellular proliferation protein. Note: The sequence data for this patent did not form part
                                                of the printed specification, but was obtained in electronic format directly from WIPO at ftp.wipo.int/pub/published_pct_sequences.
                                                                                                                                                                                                                                                                                                                             457 GAATTGTACGTGGGAATTATCCAGTTTCCAATTGGAAACT 498
                                                                                                                                                                                                                                                                                                          157 GluLeuTyrValLeuGluLeuSerSerPheGlnLeuGluThr 170
                                                                                                                 BP; 258 A; 341 C; 427 G; 291 T; 0 other;
                                                                                                                                                                               40000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ONA encoding novel human diagnostic protein #8816
                                                                                                                                                                Length:
Matches:
Conservative:
Mismatches:
Indels:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Claim 1; SEQ ID No 8816; 103pp; English.
                                                                                                                                                                                                                                                                          US-09-701-229-2 (1-448) x AAS56341 (1-1317)
                                                                                                                                                                                                                                                                                                                                                                                                         AAS73012 standard; cDNA; 2058 BP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Tang YT;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  30-MAR-2001; 2001WO-US08631
                                                                                                                                                              0.00126
14.00
100.00%
100.00%
3.12%
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               31-MAR-2000; 2000US-0540217
23-AUG-2000; 2000US-0649167
                                                                                                                                                                                                                                                                                                                                                                                                                                                                         (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Drmanac RT, Liu C,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              WPI; 2001-639362/73.
                                                                                                                                                                                           Percent Similarity:
Best Local Similarity:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                (HYSE-) HYSEQ INC.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               P-PSDB; ABG08825
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    WO200175067-A2.
                                                                                                                 Sequence 1317
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Homo sapiens.
                                                                                                                                             Alignment Scores:
Pred. No.:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                      13-FEB-2002
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             blodiversity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  11-OCT-2001
                                                                                                                                                                                                                                                                                                                                                                                                                                         AAS73012;
                                                                                                                                                                                                                              Query Match:
 8888888888
                                                                                                                                                                                                                                                                                                                                         셤
```

ò

```
The invention relates to isolated polynucleotide (I) and polypeptide (II) sequences. (I) is useful as hybridisation probes, polymersae chain reaction (PCR) primers, oligomers, and for chromosome and gene mapping, and in recombinant production of (II). The polynucleotides are also used in diagnostics as expressed sequence tags for identifying expressed genes. (I) is useful in gene therapy techniques to restore normal activity of (II) or to treat disease states involving (II). (II) is useful for generating antibodies against it, detecting or quantitating a polypeptide in tissue, as molecular weight markers and as
                                                                                                                                                                                                                                                                                                                                                                                   88
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      New isolated polynucleotide and encoded polypeptides, useful in diagnostics, forensics, gene mapping, identification of mutations responsible for genetic disorders or other traits and to assess
                                                                                                                                                                                                                                                                                                                                                                  Human; chromosome mapping; gene mapping; gene therapy; forensic; food supplement; medical imaging; diagnostic; genetic disorder;
                                                                                                                                               2058
14
0
0
0
                                                                                                                                                                                                                                                                                                                                   DNA encoding novel human diagnostic protein #4899.
           Length:
Matches:
Conservative:
Mismatches:
Indels:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Claim 1; SEQ ID No 4899; 103pp; English.
                                                                                                                    US-09-701-229-2 (1-448) x AAS73012 (1-2058)
                                                                                                                                                                                                                                          AAS69095 standard; cDNA; 3117 BP.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Tang YT;
                           14.00
100.00%
100.00%
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    30-MAR-2001; 2001WO-US08631
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                31-MAR-2000; 2000US-0540217
23-AUG-2000; 2000US-0649167
              0.00192
                                                                                                                                                                                                                                                                                                       13-FEB-2002 (first entry)
                                                                         3.12%
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Drmanac RT, Liu C,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          WPI; 2001-639362/73
                                         Percent Similarity:
Best Local Similarity:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               (HYSE-) HYSEQ INC.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          P-PSDB; ABG04908
                                                                                                                                                                                                                                                                                                                                                                                                                                         WO200175067-A2.
                                                                                                                                                                                                                                                                                                                                                                                                              Homo sapiens.
Alignment Scores:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     biodiversity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                      11-OCT-2001
                                                                                                                                                                                                                                                                        AAS69095;
                                                                         Query Match:
               ..
9
                                                                                                                                                                                                             RESULT 12
                                                                                                                                                                                                                            AAS69095
```

```
polypeptide (II) sequences. (I) is useful as hybridisation probes, polymerase chain reaction (PCR) primers, oligomers, and for chromosome and gene mapping, and in recombinant production of (II). The polynucleotides are also used in diagnostics as expressed sequence tags for identifying expressed genes. (I) is useful in gene therapy techniques
a food supplement. (II) and its binding partners are useful in medical imaging of sites expressing (II). (I) and (II) are useful for treating disorders involving aberrant protein expression or biological activity. The polypeptide and polynucleotide sequences have applications in diagnostics, forensics, gene mapping, identification of mutations responsible for genetic disorders or other traits to assess biodiversity and to produce other types of data and products dependent on DNA and amino acid sequences. AAS64197-AAS94564 represent novel human diagnostic coding sequences of the invention.

Note: The sequence data for this patent did not appear in the printed specification, but was obtained in electronic format directly from WIPO
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Human; chromosome mapping; gene mapping; gene therapy; forensic; food supplement; medical imaging; diagnostic; genetic disorder; ss.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        New isolated polynucleotide and encoded polypeptides, useful in diagnostics, forensics, gene mapping, identification of mutations responsible for genetic disorders or other traits and to assess
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 The invention relates to isolated polynucleotide (I) and
                                                                                                                                                                                                                                                                                                                                                                                                                                                              GluLeuTyrValLeuGluLeuSerSerPheGlnLeuGluThr 170
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Sequence 3117 BP; 749 A; 820 C; 856 G; 692 T; 0 other;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   DNA encoding novel human diagnostic protein #25044.
                                                                                                                                                                                                                                                                                                                                     Conservative:
                                                                                                                                                                                                                                                                                                                                                    Mismatches:
Indels:
                                                                                                                                                                                                         ftp.wipo.int/pub/published_pct_sequences
                                                                                                                                                                                                                                                                                                Length:
Matches:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ID No 25044; 103pp; English.
                                                                                                                                                                                                                                                                                                                                                                                            Gaps:
                                                                                                                                                                                                                                                                                                                                                                                                                          US-09-701-229-2 (1-448) x AAS69095 (1-3117)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         AAS89240 standard; cDNA; 3117 BP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Tang YT;
                                                                                                                                                                                                                                                                                                                14.00
100.00%
100.00%
3.12%
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     30-MAR-2001; 2001WO-US08631
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         2000US-0540217
2000US-0649167
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   WPI; 2001-639362/73.
P-PSDB; ABG25053.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Drmanac RT, Liu C,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              (HYSE-) HYSEQ INC.
                                                                                                                                                                                                                                                                                                                                                      Best Local Similarity:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               WO200175067-A2.
                                                                                                                                                                                                                                                                                                                                   Percent Similarity:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Homo sapiens.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         31-MAR-2000;
23-AUG-2000;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Claim 1; SEQ
                                                                                                                                                                                                                                                                               Alignment Scores:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 13-FEB-2002
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   biodiversity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   11-OCT-2001.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               AAS89240;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  355
                                                                                                                                                                                                                                                                                                                                                                           Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         AAS8924
                                                                                                                                                                                                                                                                                                                   Score:
       888888888888888
```

```
to restore normal activity of (II) or to treat disease states involving (II). (II) is useful for generating antibodies against it, detecting or quantitating a polypeptide in tissue, as molecular weight markers and as a food supplement. (II) and its binding partners are useful in medical imaging of sites expressing (II). (I) and (II) are useful for treating disorders involving aberrant protein expression or biological activity. The polypeptide and polynucleotide sequences have applications in diagnostics, forensics, gene mapping, identification of mutations are sponsible for genetic disorders or other traits to assess biodiversity and to produce other types of data and products dependent on DNA and amino acid sequences. AAS64197-AAS94564 represent novel human Note: The sequence data for this patent did not appear in the printed specification, but was obtained in electronic format directly from WIPO
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          The invention relates to isolated polynucleotide (I) and polypeptide (II) sequences. (I) is useful as hybridisation probes, polymerase chain reaction (PCR) primers, oligomers, and for chromosome
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Human; chromosome mapping; gene mapping; gene therapy; forensic; food supplement; medical imaging; diagnostic; genetic disorder; ss
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  New isolated polynucleotide and encoded polypeptides, useful in diagnostics, forensics, gene mapping, identification of mutations responsible for genetic disorders or other traits and to assess
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        157 GluLeuTyrValLeuGluLeuSerSerPheGlnLeuGluThr 170
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Sequence 3117 BP; 749 A; 820 C; 856 G; 692 T; 0 other;
                                                                                                                                                                                                                                                                                                                                             3117
14
0
0
0
0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      DNA encoding novel human diagnostic protein #30346.
                                                                                                                                                                                                                                                                                                                                             Length:
Matches:
Conservative:
Mismatches:
                                                                                                                                                                                                                                   specification, but was obtained in electroni
at ftp.wipo.int/pub/published_pct_sequences.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Claim 1; SEQ ID No 30346; 103pp; English.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                     US-09-701-229-2 (1-448) x AAS89240 (1-3117)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                BP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                AAS94542 standard; cDNA; 4831
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Tang YT;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  31-MAR-2000; 2000US-0540217.
23-AUG-2000; 2000US-0649167.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  30-MAR-2001; 2001WO-US08631.
                                                                                                                                                                                                                                                                                                                                                             14.00
100.00%
100.00%
3.12%
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              WPI; 2001-639362/73.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Liu C,
                                                                                                                                                                                                                                                                                                                                                                                                  Best Local Similarity:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         (HXSE-) HXSEQ INC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                P-PSDB; ABG30355
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              WO200175067-A2.
                                                                                                                                                                                                                                                                                                                                                                              Percent Similarity:
                                                                                                                                                                                                                                                                                                                            Alignment Scores:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         biodiversity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  13-FEB-2002
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 11-OCT-2001.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Drmanac RT,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         355
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 AAS94542;
                                                                                                                                                                                                                                                                                                                                                                                                                 Query Match:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               RESULT 14
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 AAS94542
       g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          à
```

```
and gene mapping, and in recombinant production of (II). The polynucleotides are also used in diagnostics as expressed sequence tags to identifying expressed genes. (I) is useful in gene therapy techniques to restore normal activity of (II) or to treat disease states involving (II). (II) is useful for generating antibodies against it, detecting or quantitating a polypeptide in tissue, as molecular weight markers and as a food supplement. (II) and its binding partners are useful in medical imaging of sites expressing (II). (I) and (II) are useful in medical imaging of sites expressing (II). (I) and (II) are useful for treating discussible for generic protein expression or biological activity. The polypeptide and polynucleotide sequences have applications in disquostics, forensics, gene mapping, identification of mutations and to produce other types of data and products dependent on DNA and amino acid sequences. AsS64197-AAS94564 represent novel human disquences. AsS64197-AAS94564 represent novel human disquence data for this patent did not appear in the printed specification, but was obtained in electronic format directly from WIPO. at ftp.wipo.int/pub/published_pct_sequences.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Human; chromosome mapping; gene mapping; gene therapy; forensic; food supplement; medical imaging; diagnostic; genetic disorder; ss
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          New isolated polynucleotide and encoded polypeptides, useful in diagnostics, forensics, gene mapping, identification of mutations responsible for genetic disorders or other traits and to assess
                                                                                                                                                                                                                                                                                                                                                                         Sequence 4831 BP; 1180 A; 1249 C; 1353 G; 1049 T; 0 other;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 157 GluLeuTyrValLeuGluLeuSerSerPheGlnLeuGluThr 170
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             DNA encoding novel human diagnostic protein #25620.
                                                                                                                                                                                                                                                                                                                                                                                                                                   Length:
Matches:
Conservative:
Mismatches:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Indels:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Claim 1; SEQ ID No 25620; 103pp; English.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    US-09-701-229-2 (1-448) x AAS94542 (1-4831)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            AAS89816 standard; cDNA; 4942 BP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Tang YT;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 31-MAR-2000; 2000US-0540217.
                                                                                                                                                                                                                                                                                                                                                                                                                                 0.00429
14.00
100.00%
3.12%
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            30-MAR-2001; 2001WO-US08631
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      13-FEB-2002 (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    WPI; 2001-639362/73.
P-PSDB; ABG25629.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Drmanac RT, Liu C,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Percent Similarity:
Best Local Similarity:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             (HYSE-) HYSEQ INC.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              WO200175067-A2.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Homo saptens.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       biodiversity
                                                                                                                                                                                                                                                                                                                                                                                                               Alignment Scores:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      11-OCT-2001.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  AAS89816;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Query Match
    à
```

```
The invention relates to isolated polynucleotide (I) and probes, polymerase chain reaction (PCR) primers, oligomers, and for chromosome and gene mapping, and in recombinant production of (II). The polynucleotides are also used in diagnostics as expressed sequence tags for for identifying expressed genes. (I) is useful in gene therapy techniques to restore normal activity of (II) or to treat disease states involving (II). (II) is useful for generating antibodies against it, detecting or quantitating a polypeptide in tissue, as molecular weight markers and as food supplement. (II) and (II) and (II) are useful in medical imaging of sites expressing (II). (I) and (II) are useful for treating disorders involving aberrant protein expression or biological activity. The polypeptide and polynucleotide sequences have applications in diagnostics, forensics, gene mapping, identification of mutations constants.
                                                                                                                                                                                                                                                                                                                                                                                                                                                        and to produce other types of data and products dependent on DNA and amino acid sequences. AAS64197-AAS94564 represent novel human diagnostic coding sequences of the invention.

Note: The sequence data for this patent did not appear in the printed specification, but was obtained in electronic format directly from WIPO
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            at ftp.wipo.int/pub/published_pct_sequences.
            $$$$$$$$$$$$$$$$$$$$$$$$$$$$$$
```

Sequence 4942 BP; 1109 A; 1296 C; 1387 G; 1150 T; 0 other;

0.00439
Percent Similarity:

US-09-701-229-2 (1-448) x AASB9816 (1-4942)

2179 GAACTGTACGTGCTGGAACTGTCGAGCTTCCAGCTGGAAACC 2220 157 GluLeuTyrValLeuGluLeuSerSerPheGlnLeuGluThr 170 g à

Search completed: August 14, 2003, 09:24:59 Job time : 395 secs

```
Sequence 7912, Ap
Sequence 259, App
Sequence 5932, App
Sequence 7090, Ap
Sequence 10, Appl1
Sequence 6097, Ap
Sequence 6097, Ap
Sequence 9335, Ap
Sequence 9335, Ap
Sequence 9336, Ap
Sequence 1685, Ap
Sequence 128, App
Sequence 128, App
Sequence 2128, App
Sequence 2128, App
Sequence 2128, App
Sequence 2128, App
Sequence 2138, App
Sequence 2139, Ap
Sequence 2139, Ap
Sequence 2130, Ap
Sequence 2130, Ap
Sequence 214, App
Sequence 2157, App
Sequence 2150, Ap
Sequence 2150, Ap
Sequence 2151, App
Sequence 2151, App
Sequence 2152, App
Sequence 2153, Ap
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Essential Genes
                                                                                                                                                                                                                                          10 US-09-974-300-1685

10 US-09-974-300-1685

9 US-09-815-242-6539

9 US-09-815-242-6539

9 US-09-815-242-6539

9 US-09-815-242-8635

9 US-09-815-242-8695

0 US-09-815-242-8695

0 US-09-815-242-8695

0 US-09-815-242-8695

10 US-09-070-927A-128

8 US-09-815-242-8695

14 US-10-156-761-19
9 US-09-815-242-7912

9 US-09-815-242-9978

9 US-09-741-669-259

9 US-09-815-242-7090

1 US-09-815-242-7090

1 US-09-790-988-1

14 US-10-156-761-6097

8 14 US-10-156-761-1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 US-09-815-242-5914
US-09-741-669-257
US-09-711-669-257
US-09-815-242-5930
US-09-815-242-9976
US-09-815-242-9976
US-09-815-242-7910
US-09-815-242-7910
US-09-815-242-7910
US-09-815-242-7910
US-09-738-626-2370
US-09-738-626-2370
US-09-738-626-2370
US-09-738-626-2370
US-09-738-626-2370
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                US-09-939-980-78
US-09-815-242-2986
US-10-156-761-6095
US-09-815-242-5935
US-09-815-242-9981
US-09-815-242-9981
US-09-815-242-3822
US-09-815-242-6676
                                                                                                                                                                                                   US-09-815-242-9535
US-09-815-242-9300
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         APPLICANT: Trawick, John D.
APPLICANT: Carr, Grant J.
APPLICANT: Carr, Grant J.
APPLICANT: Yamamoto, Robert T.
APPLICANT: Xu, H. Howard
TITLE OF INVENTION: Identification of Essenti
TITLE OF INVENTION: IDENTIFICATION of Essenti
FILE REFERENCE: ELITRA, 011A
CURRENT APPLICATION NUMBER: US/09/815,242
CURRENT FILING DATE: 2001-03-21
PRIOR APPLICATION NUMBER: 60/191,078
PRIOR FILING DATE: 2000-05-23
PRIOR APPLICATION NUMBER: 60/206,848
PRIOR APPLICATION NUMBER: 60/206,848
PRIOR APPLICATION NUMBER: 60/206,848
PRIOR APPLICATION NUMBER: 60/206,848
PRIOR APPLICATION NUMBER: 60/206,727
PRIOR FILING DATE: 2000-05-26
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Sequence 7912, Application US/09815242
Patent No. US20020061569A1
GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       APPLICANT: Haselbeck, Robert
APPLICANT: Ohlsen, Kari L.
APPLICANT: 2yskind, Judith W.
APPLICANT: Wall, Daniel
APPLICANT: Trawick, John D.
APPLICANT: Carr, Grant J.
APPLICANT: Yamamoto, Robert T.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        01066
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        თთთ
                                                                                                                                                                                                     თ თ
                                                                                                                                                      1401
9025608
1353
1353
                                                                                                                                                                                                                                                                                                                                                                         1350
1350
3309400
                                             1317
1317
1314
1830121
640681
                                                                                                                                                                                                                                                                                                                                                                                                                                             32768
1269
1320
1392
9025608
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            1359
1359
1608
468
1359
    100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00

100.00
                                                                                                                                                                                                                                                                                                                                                                                                  220.8
116.4
111.5
111.5
9.8
9.8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       US-09-815-242-7912
                         (without alignments)
2872.772 Million cell updates/sec
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Description
                                                                                                                                                                                                                                                                2260
1 MSLIASDHFRIVVGLGKSGM......MFKNFEERGRLFAKAVEELA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 August 14, 2003, 07:13:51; Search time 349 Seconds
                         GenCore version 5.1.6
Copyright (c) 1993 - 2003 Compugen Ltd.
                                                                                                             nucleic search, using frame_plus_p2n model
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          hits satisfying chosen parameters:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                  1504479 segs, 1118970152 residues
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     SUMMARIES
```

Post-processing: Minimum Match 0% Maximum Match 100% Listing first 45 summaries

Database

Query Match Length DB

Score

Result . 8

length: 25 length: 2000000000

Minimum DB seq Maximum DB seq

οŧ

Total number

Searched:

Xgapop 10.0 , Xgapext Ygapop 10.0 , Ygapext Fgapop 6.0 , Fgapext Delop 6.0 , Delext

**BLOSUM62** 

Scoring table:

US-09-701-229-2

Perfect score: Sequence:

OM protein

Run on:

```
PheHisaspLeuArgGluProValAlaArgPheCysArgAlaValValLeuLeuGlyArg
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             1201 CTGGACGAAGCAGTCCGGCAGGCCGCCGAGCTGGCCGCGAAGGCGATGCGGTGCTTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ThrargProLeuIlealaaspThrValProCysTrpSerPheGlyLeuAsnLysProAsp
                      ACCCGACCGCTGATCGCCGATACCGTGCTGCTCGTCGTCGGCCTGAACAAGCCGGAC
                                                                                                                LysLeuLeuProValGlyGluLeuLysIleArgGlyAlaH1sAsnTyrSerAsnAlaLeu
                                                                                                                                                                                                                          LysAlaPheSerGlyLeuAlaHisArgCysGlnTrpValArgGluArgGlnGlyValSer
                                                                                                                                                                                                                                                                             321 TyrTyrAspAspSerLysAlaThrAsnValGlyAlaAlaLeuAlaAlaIleGluGlyLeu
                                                                                                                                           AAGCTGCTGCCGGTTGGCGAACTGAAGATCCGTGGCGCCCACAACTATTCCAACGCGCTC
                                                                                                                                                                                                                                                                                                                                                                                                                  1081 TTCCATGACCTGCGCGGAGCCGGTCGCGCGCTTCTGCCGGGCGGTGGTACTGCTTGGCCGT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  LeuaspGlualaValargGlnalaalaGluLeualaArgGluGlyAspAlaValLeuLeu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        SerProAlaCysAlaSerLeuAspMetPheLysAsnPheGluGluArgGlyArgLeuPhe
                                                                                                                                                                    AlaAlaLeuAlaLeuGlyHisAlaValGlyLeuProPheAspAlaMetLeuGlyAlaLeu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            APPLICANT: DASSLICANT: Object.
APPLICANT: Object.
APPLICANT: Object.
APPLICANT: Wall, Daniel
APPLICANT: Wall, Daniel
APPLICANT: Tarwick, John D.
APPLICANT: Tarwick, John D.
APPLICANT: Tarmicot, Robert T.
APPLICANT: Yanamoto, Robert T.
APPLICANT: Xu, H. Howard
TITLE OF INVENTION: Identification of Essential Genes in
TITLE OF INVENTION: Prokaryotes
FILE REPERBNCE: ELITRA.OllA
CURRENT APPLICATION NUMBER: US/09/815,242
CURRENT APPLICATION NUMBER: 60/191,078
PRIOR APPLICATION NUMBER: 60/206,848
PRIOR APPLICATION NUMBER: 60/206,848
PRIOR APPLICATION NUMBER: 60/206,848
PRIOR APPLICATION NUMBER: 60/206,848
PRIOR APPLICATION NUMBER: 60/207,727
PRIOR APPLICATION NUMBER: 60/207,727
PRIOR APPLICATION NUMBER: 60/207,727
PRIOR APPLICATION NUMBER: 60/207,727
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ţ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            441 AlaLysAlaValGluGluLeuAla 448
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Sequence 9978, Application US/09815242 Patent No. US20020061569A1 GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    APPLICANT: Haselbeck, Robert APPLICANT: Ohlsen, Kari L.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               US-09-815-242-9978
                                                                                                                                                                                                                         301
                                                                                                                                                                                                                                                                                                                                                                                        361
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       421
       221
                                661
                                                          241
                                                                                     721
                                                                                                                                          781
                                                                                                                                                                    281
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  401
                                                                                                                261
                             셤
                                                          ò
                                                                                 셤
                                                                                                                                         셤
                                                                                                                                                                                            g
                                                                                                                                                                                                                         à
                                                                                                                                                                                                                                                    g
                                                                                                                                                                                                                                                                                                      8
                                                                                                                                                                                                                                                                                                                                  ò
                                                                                                                                                                                                                                                                                                                                                           g
                                                                                                                                                                                                                                                                                                                                                                                                                 셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                      g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 a
                                                                                                                ò
                                                                                                                                                                    ò
                                                                                                                                                                                                                                                                             ò
                                                                                                                                                                                                                                                                                                                                                                                        à
                                                                                                                                                                                                                                                                                                                                                                                                                                               à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              240
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          100
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    300
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 160
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     480
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          540
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    999
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               LeuGluLeuSerSerPheGlnLeuGluThrCysAspArgLeuAsnAlaGluValAlaThr 180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    80
                                                                                                                                                                                                                                                                                                                                                                                                                               9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               9
                                                                                                                                                                                                                                                                                                                                                                                                                                                         SerLeuValArgTyrLeuAlaArgArgGlyLeuProPheAlaValValAspThrArgGlu 40
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ValLeuAsnValSerGluAspHisMetAspArgTyrAspGlyMetAlaAspTyrHisLeu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       AsnProProGluLeuAlaThrLeuArgAlaGlnTyrProGlnValGluValArgCysGly
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            1347
448
0
0
0
0
                                                                                                                                                                                                                                                                           Length:
Matches:
Conservative:
Mismatches:
Indels:
Gaps:
                                                                                                                                                                                                                                                                                                                                                                       US-09-701-229-2 (1-448) x US-09-815-242-7912 (1-1347)
PRIOR APPLICATION NUMBER: 60/242,578
PRIOR FILING DATE: 2000-10-23
PRIOR PILING DATE: 2000-11-27
PRIOR FILING DATE: 2000-11-27
PRIOR PLING DATE: 2000-11-27
PRIOR RILING DATE: 2000-12-22
PRIOR APPLICATION NUMBER: 60/257,931
PRIOR APPLICATION NUMBER: 60/269,308
PRIOR PRILING DATE: 2001-02-16
NUMBER OF SEQ ID NOS: 14110
SOFTWARE: FBSLEEQ for Windows Version 4.0
SEQ ID NO 7912
LENGTH: 1347
                                                                                                                                                                              ORGANISM: Pseudomonas aeruginosa
                                                                                                                                                                                                                                                                        2.29e-258
2260.00
100.00%
100.00%
                                                                                                                                                                                                                      ; LOCATION: (1)...(1347)
US-09-815-242-7912
                                                                                                                                                                                                                                                                                                    Percent Similarity:
Best Local Similarity:
                                                                                                                                                                                                          NAME/KEY: CDS
                                                                                                                                                                                                                                                              Alignment Scores:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             361
                                                                                                                                                                                                                                                                                                                                                                                                                                                       21
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              41
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           181
                                                                                                                                                                    TYPE: DNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      81
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         141
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  421
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             161
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       481
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            541
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       201
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               601
                                                                                                                                                                                             FEATURE:
                                                                                                                                                                                                                                                                                                                                 Query Match:
                                                                                                                                                                                                                                                                            Pred. No.:
```

ð g ð g å g õ d ò g à a à g ö q ò g ð g à

1020

340

300 900 320 960 1080

360

1140

400

380

1200

420

```
|||||||::
| GCGCGCTATCTGACCGGCGATCGTATCCGCCTGTATTGCTTTGGGCGCGGATGGCGCGCAG 1128
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     1021 CATCTGCTGCTGGCGCGCGACGTAAGTCGGCAGACTTT-----TCTCCGCTG 1068
                                                                                                                                           846
                                                                                                                                                                                                                                    328
                                                                                                                                                                                                                                                                   996
                                                                                                                                                                                                                                                                                                                                                           349 ValLeuLeuAlaGlyGlyAspGlyLySGlyAlaAspPheHisAspLeuArgGluProVal 368
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         AlaSerLeuAspMetPheLysAsnPheGluGluArgGlyArgLeuPheAlaLysAlaVal 444
      288
                                                                                                                                                                          308
                                                                                                                                                                                                       906
                                                                                                                                                                                                                                                                                                 AsnValGlyAlaAlaLeuAlaAlaIleGluGiyLeuGlyAlaAspIleAspGlyLysLeu 348
                                                                                                                                                                                                                                                                                                                                                                                                                        AlaArgPheCysArgAla------ValValLeuLeuGlyArgAspAlaGlyLeu 384
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    404
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ValArgGlnAlaAlaGluLeuAlaArgGluGlyAspAlaValLeuLeuSerProAlaCys 424
                                                                                                                                                                                                                                                      CAGCAGGGCGAAACCTGGCTACGAGTCAAAGGTGAGAAGGTGCTGAAACGTGAAAGAGATG
                                                                                                                             ArgCysGlnTrpValArgGluArgGlnGlyValSerTyrTyrAspAspSerLysAlaThr
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            GluAspGlyGlnLysTrpLeuAlaPheGlnPheAspLysLeuLeuProValGlyGluLeu
                                                                                                                                                                          ValGlyLeuProPheAspAlaMetLeuGlyAlaLeuLysAlaPheSerGlyLeuAlaHis
                                                                                                               LysIleArgGlyAlaHisAsnTyrSerAsnAlaLeuAlaAlaLeuAlaLeuGlyHisAla
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    IlealaGlnAlaLeuGlyAsnAlaValProLeuValArgValAlaThrLeuAspGluAla
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Sequence 259, Application US/09741669
Patent No. US20020022718A1
GENERAL INFORMATION:
APPLICANT: FORSYLN. R. Allyn
APPLICANT: Ohlsen, Kari L.
APPLICANT: Zyskind, Judith W.
TITLE OF INVENTION: Genes identified as required for TITLE OF INVENTION: proliferation of E. coli
FILE REFERENCE: ELITRA.009A
CURRENT APPLICATION NUMBER: US/09/741,669
CURRENT FILING DATE: 2000-12-19
PRIOR APPLICATION NUMBER: US 60/173005
PRIOR APPLICATION DATE: 1999-12-23
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 NUMBER OF SEQ ID NOS: 481
SOFTWARE: FastSEQ for Windows Version 4.0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          :::||||||
1303 AAGGAGTTA 1311
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     GluGluLeu 447
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                TYPE: DNA
ORGANISM: Escherichia
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ; LOCATION: (1)...(1317)
US-09-741-669-259
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                US-09-741-669-259
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             NAME/KEY: CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  SEQ ID NO 259
                                                                                                                                                                                                                                                                                                                            196
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    385
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               405
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            1183
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           425
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     445
                                                                                                                                           787
                                                                                                                                                                                                                                    309
                                                                                                                                                                                                                                                                                                 329
                                                   249
                                                                                727
                                                                                                             269
                                                                                                                                                                          289
                                                                                                                                                                                                       847
                                                                                                                                                                                                                                                                   907
                                                                                                                                                                                                                                                                                                                                                                                                                        369
                                                                                                                                       g
                                                                                                                                                                                                                                  δý
                                                                                                                                                                                                                                                               g
                                                                                                                                                                                                                                                                                                                         q
                                                                                                                                                                                                                                                                                                                                                           ŏ
                                                                                                                                                                                                                                                                                                                                                                                        셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                  g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ద
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ద
                                                 δ
                                                                             ΩD
                                                                                                           Qγ
                                                                                                                                                                          ö
                                                                                                                                                                                                    QQ
                                                                                                                                                                                                                                                                                               δ
                                                                                                                                                                                                                                                                                                                                                                                                                        à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ŏ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  d
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    141
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  315
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               375
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          435
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                255
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                90 AlaalaLysGlyValArgIleSerGlyAspIleAspLeuPheAlaArgGluAlaLysAla 109
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           110 ProlleValAlalleThrGlySerAsnAlaLysSerThrValThrThrLeuValGlyGlu 129
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ValProCysTrpSerPheGlyLeuAsnLysProAspPheLysAlaPheGlyLeuIleGlu 248
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       142 -----CCGCAAGAGGTTGAGCGTCACGTTGGCGGCCTGAACGACGAGGGCTCTTAGCG 195
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          130 MetalaValAlaAlaAspLysArgValAlaValGlyGlyAsnLeuGlyThrProAlaLeu 149
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            AlaArgGlnValValValAsnArgAlaAspAlaLeuThrArgProLeuIleAlaAspThr 228
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              69
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        83
                                                                                                                                                                                                                                                                                                                                                                                                                                        30
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 50
                                                                                                                                                                                                                                                                                                                                                                                                                                                                     87
                                                                                                                                                                                                                                                                                                                                                                                                                                   11 IleValValGlyLeuGlyLysSerGlyMetSerLeuValArgTyrLeuAlaArgArgGly
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  31 LeuProPheAlaValValAspThrArgGluAsnProProGluLeuAlaThrLeuArgAla
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          51 GlnTyrProGln---ValGluValArgCysGlyGluLeuAspAlaGluPheLeuCysSer
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    70 AlaArgGluLeuTyrValSerProGlyLeuSerLeuArgThrProAlaLeuValGlnAla
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         AspArgTyrAsp---GlyMetAlaAspTyrHisLeuAlaLysHisArgIlePheArgGly
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        616 GCGAAAGTGTGCGTAGTGAATGCCGATGACGCGTTGACGATGCCGGTACGCGGGGCCGAT
                                                                                                                                                                                                                                                                                              1317
230
56
136
21
                                                                                                                                                                                                                                                                                                                            Conservative:
Mismatches:
Indels:
                                                                                                                                                                                                                                                                                                                                                                                                      US-09-701-229-2 (1-448) x US-09-815-242-9978 (1-1317)
                                                                                                                                                                                                                                                                                               Length:
Matches:
                                                                                                                             4.0
PRIOR FILING DATE: 2000-10-23
PRIOR APPLICATION NUMBER: 60/253,625
PRIOR FILING DATE: 2000-11-27
PRIOR FILING DATE: 2000-11-27
PRIOR PRLING DATE: 2000-12-22
PRIOR APPLICATION NUMBER: 60/269,308
PRIOR PRIOR PRICE 2001-02-16
NUMBER OF SEQ ID NOS: 14110
SEQ ID NO 9978
LENGTH: 1317
                                                                                                                                                                                                                                                                                            1.7e-107
989.50
64.56%
51.92%
43.78%
                                                                                                                                                                                    ORGANISM: Salmonella typhi
FEATURE:
                                                                                                                                                                                                                  ) NAME/KEY: CDS
) LOCATION: (1)...(1317)
US-09-815-242-9978
                                                                                                                                                                                                                                                                                                                    Percent Similarity:
Best Local Similarity:
Query Match:
                                                                                                                                                                                                                                                                               Alignment Scores:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              190
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            503
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         229
                                                                                                                                                                          TYPE: DNA
                                                                                                                                                                                                                                                                                               Pred. No.:
                                                                                                                                                                                                                                                                                                                Score:
```

à 셤 à q ò . **a** à g à 셤 ò g å g ò 셤 ò 셤 ò

g

g

ŏ

ò

329 ASDVAIGLYALAALAEUALAALAILEGIUGLYLEUGLYALAASPILEASPGLYLYSLEU	369 AlaArgPheCysArgAlaValValLeuLeuGlyArgAspAlaGlyLeu	Db 1129 CTGGCGGCGCTACGCCCGGAAGTGGCAGAACCGAAACTATGGAACAGGCG 1182  Qy 405 ValArgGlnAlaAlaGluLeuAlaArgGluGlyAspAlaValLeuLeuSerProAlaCys 424  :::	Oy 425 AlaSerLeuAspMetPheLysAsnPheGluGluArgGlyArgLeuPheAlaLysAlaVal 444	SULT 4 -09-815-242-5932 Sequence 5932, Applica Patent No. US20020061	; GENERAL INFORMATION: ; APPLICANT: Haselbeck, Robert ; APPLICANT: Ohlsen, Kari L. ; APPLICANT: Zyskind, Judith W.	APPLICANT: Wall, Daniel ; APPLICANT: Trawick, John D. ; APPLICANT: Carr, Grant J. ; APPLICANT: Yamamoto, Robert T.	; APPLICANT: Xu, H. Howard ; TITLE OF INVENTION: Identification of Essential Genes in ; TITLE OF INVENTION: Prokaryotes ; FILE REFERENCE: ELITRA.011A	CORRENT APPLICATION NUMBER: 05/09/015,242 CURRENT FILING DATE: 2001-03-21 PRIOR FILING DATE: 2000-03-21 PRIOR FILING DATE: 2000-03-21	FRIOR FILING DATE: 2000-05-26; PRIOR FILING DATE: 2000-05-26; PRIOR FILING DATE: 2000-05-26; PRIOR FILING DATE: 2000-05-26	APPLICATION NUMBER: FILING DATE: 2000-10 APPLICATION NUMBER: FILING DATE: 2000-11.	FRIOR APPLICATION NUMBER: 60/257,931 FRIOR FILING DATE: 2000-12-22 FRIOR APPLICATION NUMBER: 60/269,308 FRIOR FILING DATE: 2001-02-16	SOFTWARE: Fast EQ for Windows Version 4.0 ; SEQ ID NO 5932 ; LENGTH: 1317	TYPE: DNA CRGANISM: Escherichia coli FEATURE: NAME/KEY: CDS	
Alignment Scores:     Pred. No.:     S.09e-107	Qy 11 IleValValGlyLeuGlyLysSerGlyMetSerLeuValArgTyrLeuAlaArgArgGly 30 ::::::::::::	Db 142CCGAAGCCGTAACGCAACCGCACGCAAAAATAA 141  Oy 51 GlnTyrProGlnValGluValArgCysGlyGluLeuAspAlaGluPheLeuCysSer 69  Db 142CCGAAGCCGTAAAAGCCAACGGAAAGCAAAAAAAAAA		Db 256 GCTGATGCCGGAATCGATGCGATATCGAGCTGTTCTGTCGCGAAGCACAAGCA 315  Qy 110 ProlleValalaIleThrGlySerAsnalaLySerThrValThrThrLeuValGlyGlu 129	laLeu         GTTG	Oy 150 AspLeuLeuAlaAspAspIleGluLeuTyrValLeuGluLeuSerSerPheGlnLeuGlu 169	Qy 170 ThrCysAspArgLeuAsnAlaGluValAlaThrValLeuAsnValSerGluAspHisMet 189	Qy 190 AspargTyraspGlyWetalaaspTyrHisLeualaLysHisargIlePheargGly 208 	Qy 209 AlaArgGlnValValAsnArgAlaAspAlaLeuThrArgProLeuIleAlaAspThr 228     ::	Qy 229 ValProCysTrpSerPheGlyLeuAsnLysProAspPheLysAlaPheGlyLeuIleGlu 248	Qy 249 GluaspGlyGlnLysTrpLeuAlaPheGlnPheAspLysLeuLeuProValGlyGluLeu 268 :::    :::	Qy 269 LysileArgGlyAlaHisAsnTyrSerAsnAlaLeuAlaAlaLeuAlaLeuGlyHisAla 288 	Qy 289 ValGlyLeuProPheAspAlaMetLeuGlyAlaLeuLysAlaPheSerGlyLeuAlaHis 308	Qy 309 ArgCysGlnTrpValArgGluArgGlnGlyValSerTyrTyrAspAspSerLysAlaThr 328

Fri Aug 15 08:06:39 2003

329 AsnValGlyAlaAlaLeuAlaAlaIleGluGlyLeuGlyAlaAspIleAspGlyLysLeu	Oy 385 AlaArgPheCysArgAlaValValLeuLeuGlYArgSPAlaGLyLeu 384	1129 CIGGCGGCGCTACGAAGGCCGCAGAACCAAGCGCGAAGCGCGAAGAGCGCGCGAAGAGCGCGCGGAAGCGGAAGCGGAAGCGGAAGCGGAAGCGGAAGCGGAAGCGGAAGCGGAAGCGGAAGCGGGGGG	1183 ATGCGCTTGCTGCGCGTGTTCAGCCGGCGATATGGTTCTGCTCCCCAGCCTGT	425	OY 445 GUGSIDER 44/ Db 1303 AAGGACTTA 1311 .	RESULT 5. US-09-815-242-7090 ; Sequence 7090, Application US/09815242 ; Patent No. US20020061569A1	; GENERAL INPORMATION: ; APPLICANT: Wasener, Robert ; APPLICANT: Ohlsen, Kari L. ; APPLICANT: Zyskind, Judith W.			CURRENT APPLICATION NUMBER: US/09/815,242  CURRENT FILING DATE: 2001-03-21  PRIOR APPLICATION NUMBER: 60/191,078  PRIOR FILING DATE: 2000-03-21		; PRIOR APPLICATION NUMBER: 60/242,578 ; PRIOR FILING DATE: 2000-10-23 ; PRIOR APPLICATION NUMBER: 60/253,625 ; PRIOR FILING DATE: 2000-11-27	; PRIOR APPLICATION UMBER: 00/25/,931 ; PRIOR FILING DATE: 2000-12-22 ; PRIOR APPLICATION NUMBER: 60/269,308 ; PRIOR FILING DATE: 2001-02-16	; NUMBER OF SEQ ID NOS: 14110 ; SOFTWARE: FastSEQ for Windows Version 4.0 ; SEQ ID NO 7090 ; LENGTH: 1314		; LOCATION: (1)(1314) US-09-815-242-7090 Alignment Scores: 2.25e-94 Length: 1314
Pred. No.: 5.09e-107 Length: 1317 Score: 985.50 Matches: 227 Percent Similarity: 64.33% Conservative: 58 Best Local Similarity: 51.24% Mismatches: 137 Query Match: 43.61% Indels: 21 DB: 9 US-09-701-229-2 (1-448) x US-09-815-242-5932 (1-1317)	Oy 11 IlevalValGlyLeuGlyLySSerGlyMetSerLeuValArgTyrLeuAlaArgArgGly 30 :::::::::	Oy 31 LeuProPheAlaValValAspThrArgGluAsnProProGluLeuAlaThrLeuArgAla 50 :::	Qy 51 GlnTyrProGlnValGluValArgCysGlyGluLeuAspAlaGluPheLeuCysSer 69	Qy 70 AlaArgGluLeuTyrValSerProGlyLeuSerLeuArgThrProAlaLeuValGlnAla 89	Oy 90 AlaAlaLysGlyValArgileSerGlyAspileAspLeuPheAlaArgGluAlaLysAla 109 	Oy 110 ProlleValAlalleThrGlySerAsnAlaLysSerThrValThrThrLeuValGlyGlu 129 	Qy 130 MetalavalalaaspLysArgValAlaValGlyGlyasnLeuGlyThrProAlaLeu 149 	Qy 150 AspLeuLeuAlaAspAspIleGluLeuTyrValLeuGluLeuSerSerPheGlnLeuGlu 169	Qy 170 ThrCysAspArgLeuAsnAlaGluValAlaThrValLeuAsnValSerGluAspHisMet 189	Qy 190 AspargTyraspGlyMetAlaAspTyrHisLeuAlaLysHisArgIlePheArgGly 208 	Oy 209 AlaArgGlnValValAsnArgAlaAspAlaLeuThrArgProLeuIleAlaAspThr 228	Qy 229 ValProCysTrpSerPheGlyLeuAsnLysProAspPheLysAlaPheGlyLeuIleGlu 248	Oy 249 GluaspGlyGlnLysTrpLeuAlaPheGlnPheAspLysLeuLeuProValGlyGluLeu 268 :::	Oy 269 LysileArgGlyAlaHisAsnTyrSerAsnAlaLeuAlaAlaLeuAlaLeuGlyHisAla 288	Qy 289 ValGlyLeuProPheAspAlaMetLeuGlyAlaLeuLysAlaPheSerGlyLeuAlaHis 308	Qy 309 ArgCysGlnTrpValArgGluArgGlnGlyValSerTyrTyrAspAspSerLysAlaThr 328 

	367	Oy 382 AlaGlyLeuIleAlaGlnAlaLeuGlyAsnAla 	Qy 402 AspGluAlaValArgGlnAlaAlaGluLeuAla. 	Qy 418 ValLeuKerSerProAlaCysAlaSerLeuAspi	Oy 438 ArgLeuPhe 440   1	RESULT 6 US-10-329-960-1 ; Sequence 1, Application US/10329960 ; Publication No. US20030099277A1	_	FILE REFERENCE: PB186P1  ; CURRENT APPLICATION NUMBER: US/10/329,960 ; CURRENT FILING DATE: 2003-01-02 ; PRIOR APPLICATION NUMBER: US 09/643,990		Ŋ		; NAME/KEY: misc_feature ; LOCATION: (4747)(4747) ; OTHER INFORMATION: n equals a, t, g or c ; FEATURE:		; NAME/KEY: misc_feature ; LOCATION: (10150)(10150) ; OTHER INFORMATION: n equals a, t, g or c ; FEATURE:	; NAME/KEY: misc_feature ; LOCATION: (29298)(29298) ; OTHER INFORMATION: n equals a, t, g or c ; FEATURE:	; NAME/KEY: misc_feature ; LOCATION: (36543)(36543) ; OTHER INFORMATION: n equals a, t, g or c ; FEATURE:	; NAME/KEY: misc_feature ; LOCATION: (36551)(36551)
: 879.00 nt Similarity: 60.72% Local Similarity: 46.50% Match: 38.89%	9-701-229-2 (1-448) x US-09-815-242-7090 (1-1314) 12 ValValGlyLeuGlyLy8SerGlyMetSerLeuValArgTyrLeuAlaArgArgGlyLeu 31 ::::::           ::   ::	ProphealaValValAspThrArgGluAsnProProGluLeuAlaThrLeuArgAlaGln	TyrproglnValGluValArgCysGlyGluLeuAspAlaGluPheLeuCysSerAla	71 ArgGluLeuTyrValSerProGlyLeuSerLeuArgThrProAlaLeuValGlnAlaAla 90	91 AlaLysGlyvalArgIleSerGlyAspIleAspLeuPheAlaArgGluAlaLysAlaPro 110 	111 IlevalalailerhrdiyserasnalabysserthrvalthrthrLeuvaldiydiuwet 130 	131 AlaValAlaAlaAspLysArgValAlaValGlyGlyAsnLeuGlyThrProAlaLeuAsp 150                  :::    :::	151 LeuLeualaaspaspilegluLeuTyrValLeuGluLeuSerSerPheGlnLeuGluThr 170         :::	171 CysaspargLeuasnalaGluValalaThrValLeuasnValSerGluaspHisMetasp 190    -  -  -  -  -  -  -  -  -  -  -  -  -	191 ArgTyrAspGlyMetalaAspTyrHisLeuAlaLySHisArgilePheArgGlyAlaArg 210        :::	211 GlnvalvalvalasnargalaaspalaLeuThrArgProLeuIleala 226    :::    		247 IleGluGluAspGlyGlnLysTrpLeuAlaPheGlnPheAspLysLeuLeuProValGly 266	267 GluLeuLysIleArgGlyAlaHisAsnTyrSerAsnAlaLeuAlaAlaLeuAlaLeuGly 286 	287 HisalaValGlyLeuProPheAspalaMetLeuGlyAlaLeuLysAlaPheSerGlyLeu 306 	307 AlaHisArgCysGlnTrpValArgGluArgGlnGlyValSerTyrTyrAspAspSerLys 326 	327 AlaThrAsnValGlyAlaAlaLeuAlaAlaIleGluGlyLeuGlyAlaAspIleAspGly 346
Scor Perc Best Quer DB:	US-09 OY Db	Q Q	% d	Qy Dp	č a	Qy Dp	Qy Dp	90 04	O O	Qy	Qy	ý 8	දු පු	Q G	ç G	Q P	δλ

```
the Haemophilus influenzae Rd Genome, Freof
                                                                                     :: |||||||
|GGCTGGGCTT----TATATTGAGGGT 1014
                                    9GlyalaaspPheH18AspLeuArgGlu 366
||||||||||||||||
|AGGGGCTGATTTTCAGAATTAGCTGAA 1074
                                                                                                                                                                                       LaArg------GluGlyAspala 417
                                                                                                                                                                                                                                      pMetPheLysAsnPheGluGluArgGly 437
                                                                                                                                                        ;
TTAT:----TTG 1158
                                                                                                                                       aValProLeuValArgValAlaThrLeu 401
```

_																		
					·													
gorc	g or c	g or c	g or c	g or c	g or c	g or c	g or c	g or c	g or c	g or c	g or c	g or c	g or c	g or c	g or c	g or c	g or c	g or c
, t	, t	í,	ţ,	, t	, t	, ,t	ث	, ب	, t	<b>ر</b> .	ţ		, ,	, ,t	, t,	, t,	, ب	<b>,</b>
OTHER INFORMATION: n equals a,	: : misc_feature N: (36636)(36636) WFORMATION: n equals a	: Y: misc_feature N: (40808)(40810) NFORMATION: n equals a	: Y: misc_feature N: (44416)(44416) NFORMATION: n equals a	: Y: misc_feature N: (44905)(44905) NFORMATION: n equals a	: misc_feature : (44975)(44975) FORMATION: n equals a	: Y: misc_feature N: (45593)(45593) NFORMATION: n equals a	FEAUURE:  LOCATION: (45732)(45732)  OTHER INFORMATION: n equals a,	FEAUURE: LOCATION: (47036)(47036) OTHER INFORMATION: n equals a	FEATURE: FEATURE: LOCATION: (51334)(51334) OTHER INFORMATION: n equals a,	FEATURE: MAME/KEY: misc_feature LOCATION: (51602)(51602) OTHER INFORMATION: n equals a,		FEATURE: NAME/KEY: misc_feature LOCATION: (51805)(51805) OTHER INFORMATION: n equals a.	: Y: misc_fe N: (55369) NFORMATION	FEATURE: NAME/KEY: misc_feature LOCATION: (65309)(65309) OTHER INFORMATION: n equals a,	FEAUURE: MARF/KE: LOCATION: (65313)(65313) OTHER INFORMATION: n equals a,	FEATURE: NAME KEY: MISC_feature LOCATION: (80024)(80024) OTHER INFORMATION: n equals a,	FEATURE:  NAME/KEY: misc_feature LOCATION: (100091)(100091) OTHER INFORMATION: n equals a,	FEATURE: NAME/KEY: misc_feature LOCATION: (102695).(102695) OTHER INFORMATION: n equals a,

```
ပ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      g or c
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           t, g or c
                                                                                                                or
                                                                                                                                                                                        ö
                                                                                                                                                                                                                                                               ö
                                                                                                                                                                                                                                                                                                                                     g or
                                                                                                                                                                                                                                                                                                                                                                                                              ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             or
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          g or
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  or
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 or
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        g or
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              t, g or
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    or
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       or
                                                                                                                                                                                                                                                                                                                                                                                                              5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             6
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  б
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 δ
NAME/KET: misc_feature
LOCATION: (105121)..(105121)
OTHER INFORMATION: n equals a, t,
                                                                    NAME/KEY: misc_feature
LOCATION: (107248)..(107248)
OTHER INFORMATION: n equals a, t,
FEATURE:
                                                                                                                                                NAME/KEY: misc_feature
LOCATION: (117136)..(117136)
OTHER INFORMATION: n equals a, t,
                                                                                                                                                                                                                         NAME/KEY: misc_feature
LOCATION: (119750)..(119750)
OTHER INFORMATION: n equals a, t,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         NAME/KEY: misc_feature
LOCATION: (122336)..(122336)
OTHER INFORMATION: n equals a, t,
FEATURE:
NAME/KEY: misc_feature
LOCATION: (131340)..(131340)
OTHER INFORMATION: n equals a, t,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                FEATURE:
NAME/KEY: misc_feature
LOCATION: (122167).
OTHER INFORMATION: n equals a,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        NAME/KEY: misc_feature
LOCATION: (131360)..(131360)
OTHER INFORMATION: n equals a,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            NAME/KEY: misc_feature
LOCATION: (147197)..(147197)
OTHER INFORMATION: n equals a, FEATURE:
                                                                                                                                                                                                                                                                            FEATURE:
NAME/KRY: misc_feature
LOCATION: (119924). (119924)
OTHER INFORMATION: n equals a,
                                                                                                                                                                                                                                                                                                                                                                    NAME/KEY: misc_feature
LOCATION: (120038)..(120038)
OTHER INFORMATION: n equals a,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   NAME/KEY: misc_feature
LOCATION: (139910)..(139910)
OTHER INFORMATION: n equals a,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        FEATURE:
NAME/KEY: misc_feature
LOCATION: (140398).
OTHER INFORMATION: n equals a,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      NAME/KEY: misc_feature
LOCATION: (145058)..(145058)
OTHER INFORMATION: n equals a,
                                                                                                                                                                                                                                                                                                                                                                                                                           FEATURE:
NAME/KEY: misc_feature
LOCATION: (121344)..(121344)
OTHER INFORMATION: n equals a,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             FEATURE:
NAME/KEY: misc_feature
LOCATION: (142750)..(142750)
OTHER INFORMATION: n equals a,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             NAME/KEY: misc_feature
LOCATION: (145171)..(145171)
OTHER INFORMATION: n equals a,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       NAME/KEY: misc_feature
LOCATION: (145942)...(145942)
OTHER INFORMATION: n equals a,
```

1204145

381

346

1204091

326

```
267 GluLeuLysIleArgGlyAlaHisAsnTyrSerAsnAlaLeuAlaAlaLeuAlaLeuGly
                       AlaThrAsnValGlyAlaAlaLeuAlaAlaIleGluGlyLeuGlyAlaAspIleAspGly
                                                                                                                                                                                                  1204092 GCAACAAATGTGGGGAGTACAGTTGCTGCATTGGCTGGGCTT----TATATTGAGGGT
                                                                                                                                                                                                                                                                                                                                                                                                                         402 AspGluAlaValArgGlnAlaAlaGluLeuAlaArg------GluGlyAspAla
                                                                                                                                                                                                                                                                                                                                                                                                                                           1204290 TTCGATACAATGGAACAACGATAGAATTTTTACGCCCAACATTGCAAAGCGGAGATATG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  307 AlaHisArgCysGlnTrpValArgGluArgGlnGlyValSerTyrTyrAspAspSerLys
                                                                                                                                                                                                                                                                                                                                                                382 AlaGlyLeulleAlaGlnAlaLeuGlyAsnAlaValProLeuValArgValAlaThrLeu
                                                               HisAlaValGlyLeuProPheAspAlaMetLeuGlyAlaLeuLysAlaPheSerGlyLeu
                                                                                                                                                                                                                                                                                                     367 ProValAlaArg-------PheCysArgAlaValValLeuLeuGlyArgAsp
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Conservative:
Mismatches:
Indels:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           US-09-701-229-2 (1-448) x US-09-790-988-1 (1-640681)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Sequence 1, Application US/09790988

Patent No. US20020127687A1

GENERAL INFORMATION:
APPLICANT: SHIGENOBU, SHUJI
APPLICANT: WATANABE, HIDEMI
APPLICANT: WATANABE, HIDEMI
APPLICANT: WATANABE, HIDEMI
APPLICANT: SAKAKI, YOSHIYUKI
ITLE OF INVENTION: GENOME DNA OF BACTERIAL SYM
FILE REPERENCE: 081366/0159
CURRENT FILING DATE: 2001-02-23
PRIOR APPLICATION NUMBER: UP2000-107160
PRIOR FILING DATE: 2000-04-07
NUMBER OF SEQ ID NOS: 7
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Length:
Matches:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          1204410 GAAGAATTT 1204418
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                716.00
57.50%
34.32%
31.68%
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            SOFTWARE: Patentin Ver. 2.1
SEQ ID NO 1
LENGTH: 640681
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              438 ArgLeuPhe 440
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            sp.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Buchnera
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Percent Similarity:
Best Local Similarity:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     US-09-790-988-1/C
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Alignment Scores
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        , ORGANISM: BI
US-09-790-988-1
                                                               287
                                                                                                                                                                                   327
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             DNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Score:
                                셤
                                                                                                                                                     셤
                                                                                                                                                                                                                                                                                                                                  쉽
                                                                                                                                                                                                                                                                                                                                                                                                                                                      g
                                                                                          셤
                                                                                                                        ò
                                                                                                                                                                                                            g
                                                                                                                                                                                                                                                                       요
                                                                                                                                                                                                                                                                                                      ö
                                                                                                                                                                                                                                                                                                                                                                ò
                                                                                                                                                                                                                                                                                                                                                                                             g
                                                                                                                                                                                                                                                                                                                                                                                                                        ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               g
                                                               à
                                                                                                                                                                                   õ
                                                                                                                                                                                                                                            ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              õ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     1203273 ---CCTCAAATATCCCTCTTCATACTGGTAGTTTAAATCAGGAATGGTTACTTGAAAGC 1203329
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               1203330 GATATGATTATTAGCCCAGGGCTTGCGGTAAAACACCAGAAATTCAAACGCGACTT 1203389
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      1203630 ACTTATAGCTTAAAAGCTGCGCGAGCGACTGTCTTGAACGTGACGAAGATCATATGGAT 1203689
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    1203690 CGCTATATGGATTTAGAAGATTATCGCCAAGCAAAATTACGCATTTATCATAATGCTAAA 1203749
                                                                                                                                                                                                                                                                                                                                             1203162 ATCATCGGGCTTGGCAAACAGGTCTTTGTGTGTGGATTATCTCTTATCCCAACAGGCT 1203221
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ||||:::|||
|1203750 GTAGGTGTGTAGAAGAATGAAGGCTGACTTTTGGGGAAAACGAAAATCAAGCGAAA 1203809
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    AAAACTGAAAATGGCAAGCAATATTTAATGGTAAAAGATGAAGTGATTTTACCTTGTGAA 1203911
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 246
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             171 CysAspArgLeuAsnAlaGluValAlaThrValLeuAsnValSerGluAspH1sMetAsp 190
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     LeuLeuAlaAspAspIleGluLeuTyrValLeuGluLeuSerSerPheGlnLeuGluThr 170
                                                                                                                                                                                                                                                                                                                                                                                                                                       20
                                                                                                                                                                                                                                                                                                                                                                         32 ProPheAlaValValAspThrArgGluAsnProProGluLeuAlaThrLeuArgAlaGln 51
                                                                                                                                                                                                                                                                                                               ValValGlyLeuGlyLysSerGlyMetSerLeuValArgTyrLeuAlaArgArgGlyLeu 31
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              71 ArgGluLeuTyrValSerProGlyLeuSerLeuArgThrProAlaLeuValGlnAlaAla 90
                                                                                                                                                                                                                                                                                                                                                                                                                                   TyrProGln----ValGluValArgCysGlyGluLeuAspAlaGluPheLeuCysSerAla
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        191 ArgTyrAspGlyMetAlaAspTyrHisLeuAlaLysHisArgIlePheArgGlyAlaArg
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  211 GlnValValValAsnArgAlaAspAlaLeuThr--;----ArgProLeuIleAla
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             AspThrValProCysTrpSerPheGlyLeuAsnLysProAspPheLysAlaPheGlyLeu\\
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        IleGluGluAspGlyGlnLysTrpLeuAlaPheGlnPheAspLysLeuLeuProValGly
                                                                                                                                                                                                               63
136
                                                                                                                                                                                                             Conservative:
Mismatches:
Indels:
                                                                                                                                                                                                                                                                                  US-09-701-229-2 (1-448) x US-10-329-960-1 (1-1830121)
                                                                                                                                                                                Length:
Matches:
                                                                                           ပ
                                  O
                                  ö
                                                                                           ö
                                  δ
                                  نډ
                                  ď
                                           FEATURE:
NAME/KEY: misc_feature
LOCATION: (152500)..(152500)
OTHER INFORMATION: n equals a,
                                                                                                                                                                             8.39e-90
879.00
60.72%
46.50%
38.89%
NAME/KEY: misc_feature
LOCATION: (150841)..(150841)
OTHER INFORMATION: n equals
                                                                                                                   NAME/KEY: misc_feature
LOCATION: (152530). (152530)
                                                                                                                                                                                                          Percent Similarity:
Best Local Similarity:
                                                                                                                                                              Alignment Scores:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     151
                                                                                                                                                                                                                                                                                                                 12
                                                                                                                                                                                                                                                                                                                                                                                                                                    22
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               227
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      1203852
                                                                                                      FEATURE:
                                                                                                                                                                                                                                        Query Match:
                                                                                                                                                                                                                                                                                                                                            g
                                                                                                                                                                                                                                                                                                                                                                                                     g
                                                                                                                                                                                                                                                                                                                 õ
                                                                                                                                                                                                                                                                                                                                                                         à
                                                                                                                                                                                                                                                                                                                                                                                                                                   ŏ
                                                                                                                                                                                                                                                                                                                                                                                                                                                               셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ద
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      å
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              요
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             õ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ð
```

1204409

SYMBIONT OF

437

417

	96097 NO. US20030119018A1 NO. US20030119018A1 NEARTION: NOMURA, SATOSHI IKEDA, HARUO ISHIKAWA, HIROSHI SHIRA, TOSHIYUKI HATTOKI, WASAHIRA HATTOKI, MASAHIRA HATTOKI, MOVEL POLIVUCI SNCE: 249-262 FUCATION NUMBER: US/10/ TING DATE: 2001-05-30 CATION NUMBER: JP 2001- NG DATE: 2001-05-30 ICATION NUMBER: JP 2001- NG DATE: 2001-06-02 SEQ ID NOS: 15109	PERAUNES: Streptomyces avermitilis	
QY 11 IleValValGIyLeuGIyLysSerGIyMetSerLeuValArgTyrLeuAlaArgArgGIy 30	90 AlahlaLySGlyValArglleSerGlyAspileAspLeuPheAlaArgGluAlarasca 24103 241035 GGTTGCTAGGTTTATTAGTGATTATTAGAGATTGAGGTATTGAGGTATTGAGGTATTGAGGTATTGAGGTATTGAGGTATTGAGGTATTGAGGTATTGAGGTATTGAGGTATTGAGGTATTGAGGTATTGAGGTATTGAGGTATTGAGGTATTGAGGTATTGAGGTATTGAGGTATTGAGGTATTGAGGTATTGAGGTATTGAGGTATTGAGGTATTGAGGTATTGAGGTAGGTAGGTAGTA	OY 209 AlaArgGlnValValAsnArgAlaAspalaLeuThrArgProLeuLleAlaAspThr 228	Qy 368 ValalaArgPheCysArgAlaValValLeuLeuGlyArgAspAlaGlyLeuIleAlaGln 387

```
1071
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            1132 TCGGCACAGGGGCTCCGGGGTGTGGTGCTCCATCGGTGCGGATCGTGGCTGTGGTGCGTGAA 1191
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  LeuSerSerPheGlnLeuGluThrCysAspArgLeuAsnAlaGluValAlaThrValLeu 182
                                                                                                                                                                                                                                                                   618
                                                                                                                                                                                                                                                                                                                     678
                                                                                                                                                                                                                                                                                                                                                236
                                                                                                                                                                                                                                                                                                                                                               379 CAGATGCTCGCTCGATCCTGACGCCGCGGGCCTGCGCACGGCCGGGTCGGCAACATC 438
                                                                                                                                 GlyThrProAlaLeuAsp-----LeuLeuAlaAspAspIleGluLeuTyrValLeuGlu 162
                                                                                                                                                                                                                                                                                             221
                                                                                                                                                                                                                                                                                                                                                                                                                             798
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     GIGCATCCGCCCGCCCCCCACAACATCCCCTTTGCGGCAGCGCCCTGGCGCGC 906
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        288 AlavalGlyLeuProPheAspAlaMetLeuGlyAlaLeuLysAlaPheSerGlyLeuAla 307
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      996
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    347
                                                                                                                                                                                                                                                                                                                                                                                                                                                  ---GluAspGlyGlnLysTrpLeuAlaPheGlnPheAspLysLeuLeuProValGlyGlu 267
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         287
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    348 LeuValLeuLeuAlaGlyGlyAspGlyLysGlyAlaAspPheHisAspLeuArgGluPro 367
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       368 ValAlaArgPheCysArgAlaValValLeuLeuGlyArgAspAlaGlyLeuIleAlaGln 387
                                          GGCCCCGGATCCGCGCCCTGGCTCGCCGTCACGGCACCACGACGACACGACGTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      LeulysileargGlyalaHisasnTyrSerAsnAlaLeuAlaalaLeuAlaLeuGlyHis:::
                                                                           ThrLeuValGlyGluMetAlaValAlaAlaAspLysArgValAlaValGlyGlyAsnLeu
                                                                                                                                                    GGCGTCTCGCTCCTCGACGCGGTCCTCGGCGAGGAGGACGTACGACGTCCTCGCGGTCGTCGAAA
                                                                                                                                                                                               237 AsnLysProAspPheLysAlaPheGlyLeuIleGlu--------
                                                                                                                                                                                                                                                                                                                                                                                                                 HisargCysGlnTrpValargGluArgGlnGlyValSerTyrTyrAspAspSerLysAla
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               GCGGCCGCCGAGGCGGCGTCCCGGTCTGGGGCGACGTCGAACTCGCCTGGCGGCTGCGC
                                                                                                                                                                                                                                      AsnValSerGluAspHisMetAspArgTyrAspGlyMetAlaAspTyrHisLeuAlaLys
                                                                                                                                                                                                                                                                                        203 HisArgilePheArgGlyAlaArg---GlnValValValAsnArgAlaAspAlaLeuThr
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   GCCTTCGGGGTGCCCCCCCCCGGCGTACGGGACTGCGGGCCTTCCGCCCGGACGCC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ThrAsnValGlyAlaAlaLeuAlaAlaIleGluGlyLeuGlyAlaAspIleAspGlyLys
                           ---GluAlaLysAlaProIleValAlaIleThrGlySerAsnAlaLysSerThrValThr
                                                                                                                                                                                                                                                                                                                                              222 ArgProLeuIle-----AlaAspThrValPro---CysTrpSerPheGly-----Leu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                             799 GTCGAGGACCGGCAGAG------AACGCCCAGGAGCTGGCCGAGGTGGCGGAC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   1192 GCCCTTGCGCGACACGCCCCGGAGGTACCCGTCGTCGACCTCGACCGGACCGACACTGGG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ------AlaValArgGlnAlaAlaGluLeuAlaArgGluGlyAspAlaValLeu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          388 AlaLeuGlyAsnAlaValProLeuValArgValAlaThrLeuAspGlu-----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       296
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 328
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         1027
                          106
                                                    319
                                                                            125
                                                                                                                                 145
                                                                                                                                                        439
                                                                                                                                                                                    163
                                                                                                                                                                                                           499
                                                                                                                                                                                                                                     183
                                                                                                                                                                                                                                                               559
                                                                                                                                                                                                                                                                                                                                                                      619
                                                                                                                                                                                                                                                                                                                                                                                                                                                     249
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      268
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               847
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  206
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             308
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              404
                                                                                                                                                   g
8
                          å
                                              g
                                                                          ò
                                                                                                    셤
                                                                                                                              ò
                                                                                                                                                                                  ò
                                                                                                                                                                                                           셤
                                                                                                                                                                                                                                ò
                                                                                                                                                                                                                                                          a
                                                                                                                                                                                                                                                                                         ò
                                                                                                                                                                                                                                                                                                                 g
                                                                                                                                                                                                                                                                                                                                           δ
                                                                                                                                                                                                                                                                                                                                                                    셤
                                                                                                                                                                                                                                                                                                                                                                                               õ
                                                                                                                                                                                                                                                                                                                                                                                                                    a
                                                                                                                                                                                                                                                                                                                                                                                                                                                  à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                         셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   õ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ŏ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           õ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              å
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ð
```

```
7360919 GTCGCCGGGCTCGGCGTCTCCGGTATCCCGGCGCCCGCGTGCTGCACGGCCTCGGCGCG 7360978
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   7360979 GTCGTCACGGTCGTCAACGACGCCGACGACGACGCCTCCCGGGCCCAGGCCGCGGGATCTG 7361038
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               7361206
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    --- GlualaLysalaProIleValalaIleThrGlySerAsnAlaLysSerThrValThr 124
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ThrLeuValGlyGluMetAlaValAlaAlaAspLysArgValAlaValGlyGlyAsnLeu 144
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              48
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        68
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               87
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     12 ValValGlyLeuGlyLysSerGlyMetSerLeuValArgTyrLeuAlaArgArgGlyLeu 31
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    49 ArgAlaGlnTyrProGlnValGluValArgCysGlyGluLeuAspAlaGluPheLeuCys
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ProPheAlaValVal------AspThrArgGluAsnProProGluLeuAlaThrLeu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             SerAlaArgGluLeuTyrVal --- SerProGlyLeuSerLeuArgThrProAlaLeuVal
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      88 GlnAlaAlaAlaLysGlyValArgIleSerGlyAspIleAspLeuPheAlaArg-----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  9025608
180
55
188
45
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Matches:
Conservative:
Mismatches:
Indels:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   US-09-701-229-2 (1-448) x US-10-156-761-1 (1-9025608)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             g, other or unknown
                                                                                                                                                         APPLICANT: OMURA, SATOSHI
APPLICANT: IKEDA, HARUO
APPLICANT: ISHIKAWA, JUN
APPLICANT: SHIKAWA, JUN
APPLICANT: SHIKAWA, JUN
APPLICANT: SHIBA, TADAYOSHI
APPLICANT: SARAKI, YOSHIYUKI
APPLICANT: HATTORI, MASHIRA
TITLE OF INVENITORI, MASHIRA
TITLE OF INVENITORI NOVEL POLYNUCLEOTIDES
FILE REFERENCE: 249-26
CURRENT FILING DATE: 2002-05-29
PRIOR APPLICATION NUMBER: JP 2001-204089
PRIOR APPLICATION NUMBER: JP 2001-272697
NUMBER OF SEQ ID NOS: 15109
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Length:
                   1372 TTCGCGGAGGCGGTTCGCGGACTC 1395
PheAlaLysAlaValGluGluLeu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ORGANISM: Streptomyces avermitilis
                                                                                                         Sequence 1, Application US/10156761 Publication No. US20030119018A1 GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                7.39e-58
618.50
50.218
38.468
27.378
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ú
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ; NAME/KEY: misc_feature
; LOCATION: (4187715)
; OTHER INFORMATION: a, t,
US-10-156-761-1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Percent Similarity:
Best Local Similarity:
Query Match:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 LENGTH: 9025608
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Alignment Scores:
440
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             106
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    125
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      DNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                  SEO ID NO 1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Pred. No.:
 ð
                                8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          d
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       õ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        õ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             óγ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 엽
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             õ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  à
```

```
73 GCTCGTTTGTTGGACAAGTTAGGTGCCATTGTGACAGTAAATGATGGGAAACCATTCGAG 132
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       133 GACAATCCAGCTGCCCAATGTTTGCTGGAA-----GAAGGGATCAAGGTCATTACA 183
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     :::|||||||:::
---AATCCAGGTATCCCCTACAGCAATCCCATGATTGAAAAGGCTTTGGCCAAGGGAATT 291
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              184 GGTGGCCATCCTTTGGAACTCTTGGATGAAGAGTTTGCCCTCATGGTAAAA----- 234
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    GluAsnProProGluLeuAlaThrLeuArgAlaGlnTyrProGlnValGluValArgCys 59
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           7 AspHisPheArg-----IleValValGlyLeuGlyLysSerGlyMetSerLeu 22
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            GlyGlu-------LeuAspAlaGluPheLeuCysSerAlaArgGluLeuTyr
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 75 ValSerProGlyLeuSerLeuArgThrProAlaLeuValGlnAlaAlaAlaklySGlyVal ::::||||||||:::
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  23 ValArgTyrLeuAlaArgArgGlyLeuProPheAlaValValAspThrArg------
                                                                                 APPLICANT: ITAMICA, SOUR D.
APPLICANT: Grant J.
APPLICANT: Yamamoto, Robert T.
APPLICANT: Yau, H. HOWARD
TITLE OF INVENTION: Identification of Essential Genes in
TITLE OF INVENTION: Prokaryotes
FILE REFERENCE: ELITRA.011A
CURRENT APPLICATION WURBER: 05/09/815,242
CURRENT APPLICATION WURBER: 05/09/815,242
CURRENT APPLICATION WURBER: 06/191,078
PRIOR FILING DATE: 2000-03-21
PRIOR FILING DATE: 2000-05-23
PRIOR FILING DATE: 2000-05-23
PRIOR FILING DATE: 2000-05-23
PRIOR FILING DATE: 2000-10-23
PRIOR FILING DATE: 2000-11-27
PRIOR PELING DATE: 2000-11-27
PRIOR PELING DATE: 2000-11-27
PRIOR FILING DATE: 2000-12-22
PRIOR FILING DATE: 2000-12-22
PRIOR FILING DATE: 2000-12-22
PRIOR PRIOR FILING DATE: 2000-12-22
PRIOR PRIOR FILING DATE: 2000-12-22
PRIOR PRIOR PRIOR DATE: 2001-12-22
PRIOR PRIOR PRIOR DATE: 2001-12-12
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1353
163
82
177
41
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Conservative:
Mismatches:
Indels:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          US-09-701-229-2 (1-448) x US-09-815-242-9535 (1-1353)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Length:
Matches:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   FastSEQ for Windows Version 4.0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        TYPE: DNA ORGANISM: Streptococcus pneumoniae FEATURE:
                      Ohlsen, Kari L.
Zyskind, Judith W.
                                                     Wall, Daniel
Trawick, John D.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              592.50
52.928
35.218
26.228
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  NUMBER OF SEC ID NOS: 14110
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         , LOCATION: (1)...(1353)
US-09-815-242-9535
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Best Local Similarity:
Query Match:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Percent Similarity:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 SOFTWARE: Fast(
SEQ ID NO 9535
LENGTH: 1353
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          NAME/KEY: CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Alignment Scores:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              13
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      40
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            09
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Pred. No.:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ŏ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Qγ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           7361446
                                                                                                                                                                                                                                                                                                      7361687 GTCGAGGACCGGCAGAAG------AACGCCCAGGAGCTGGCCGAGGTGGCGGAC 7361734
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            7362140 GCGATGCCCGCGGCTGTCCAGGAGGCGCGGCGGCTCGCCGTCGCCGGCGACACGGTACTG 7362199
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                7361735 GTGCATCCGCCCCCCCCCACAACATCGCCCAACGCCCTTGCGGCAGCGGCCCTGGCGCGCC 7361794
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 7362080 GCCCTTGCGCGACACGCCCCGGAGGTACCCGTCGTCGACCTCGACCGGACCGACACTGGG 7362139
                                                                                                                                                                                                               221
                                                                                                                                                                                                                                                                                                                                                                                                                            267
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         307
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       367
                                                                                                                                                                                                                                                                                   ArgProLeuIle-----AlaAspThrValPro---CysTrpSerPheGly-----Leu 236
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          HisArgCysGlnTrpValArgGluArgGlnGlyValSerTyrTyrAspAspSerLysAla 327
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ThrasnValGlyAlaAlaLeuAlaAlaIleGluGlyLeuGlyAlaAspIleAspGlyLys 347
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         LeuSerProAlaCysAlaSerLeuAspMetPheLysAsnPheGluGluArgGlyArgLeu 439
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ValalaargPheCysArgAlaValValLeuLeuGlyArgAspAlaGlyLeuIleAlaGln 387
GlyThrProAlaLeuAsp-----LeuLeuAlaAspAspIleGluLeuTyrValLeuGlu
                               7361327 GCCGTCTCGCTCCTCGACGCGCTCCTCGCCGAGGACGTACGACGTCCTCGCGGGTCGAA
                                                                      LeuSerSerPheGlnLeuGluThrCysAspArgLeuAsnAlaGluValAlaThrValLeu
                                                                                                     7361387 CTCTCCAGCTACCAGCTGCACTGGGCGCCCTCCTGCGCGCCCACTCCGCCACCTCCTG
                                                                                                                                         AsnValSerGluAspHisMetAspArgTyrAspGlyMetAlaAspTyrHisLeuAlaLys
                                                                                                                                                                                                             HisArgIlePheArgGlyAlaArg---GlnValValValAsnArgAlaAspAlaLeuThr
                                                                                                                                                                                                                                                                                                                                                      237 AsnLysProAspPheLysAlaPheGlyLeuIleGlu-----------
                                                                                                                                                                                                                                                                                                                                                                                                                       ---GluAspGlyGlnLysTrpLeuAlaPheGlnPheAspLysLeuLeuProValGlyGlu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 LeuLysIleArgGlyAlaHisAsnTyrSerAsnAlaLeuAlaAlaLeuGlyHis :::
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     AlaValGlyLeuProPheAspAlaMetLeuGlyAlaLeuLysAlaPheSerGlyLeuAla
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     LeuValLeuLeuAlaGlyGlyAspGlyLysGlyAlaAspPheHisAspLeuArgGluPro
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                AlaLeuGlyAsnAlaValProLeuValArgValAlaThrLeuAspGlu------
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      --- AlaValArgGlnAlaAlaGluLeuAlaArgGluGlyAspAlaValLeu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     PheAlaLysAlaValGluGluLeu 447
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Sequence 9535, Application US/09815242 Patent No. US20020061569A1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      US-09-815-242-9535
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               440
                                                                    163
                                                                                                                                          183
                                                                                                                                                                                                             203
                                                                                                                                                                                                                                                                                  222
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     288
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          308
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              328
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     348
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         368
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                388
 145
                                                                                                                                                                                                                                                                                                                                                                                                                           249
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         420
                                                                                                                                                                                                                                                                                                           g
                                                                                                                                                                                                                                                                                                                                                                                  qq
                                                                                                                                                                                                                                                                                                                                                                                                                                                      g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    유
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                셤
                                 셤
                                                                    ò
                                                                                                  셤
                                                                                                                                       δ
                                                                                                                                                                      g
                                                                                                                                                                                                       Qγ
                                                                                                                                                                                                                                         g
                                                                                                                                                                                                                                                                              ò
                                                                                                                                                                                                                                                                                                                                             οy
                                                                                                                                                                                                                                                                                                                                                                                                                     δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            οy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    qq
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ò
```

74

```
ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ద
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       111 :: :: 111 :: 111 :: 11096 GTGCCAGACATACTGGAGAACGTGTC 1155
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          1039 AGCAAGGTCGTCTTGATTGCAGGTGGTTTGGACCGTGGCAATGAGTTTGACGAATTG--- 1095
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         AlaAspAspIleGluLeuTyrValLeuGluLeuSerSerPheGlnLeuGluThrCysAsp 172
                                                                                                                                                                                                                                                          228
                                                                                                                                                                                                                                                                                                      -----ValProCysTrpSerPheGlyLeuAsnLysProAspPheLysAlaPheGly 245
                                                                                                                                                                                                                                                                                                                                                       LeuIleGluGluAspGlyGlnLysTrpLeuAlaPheGlnPheAspLysLeuLeuProVal 265
                                                  AspLysArgValAlaValGlyGlyAsnLeuGlyThrProAlaLeuAspLeu-----Leu 152
                                                               173 ArgLeuAsnAlaGluValAlaThrValLeuAsnValSerGluAspHisMetAspArgTyr 192
                                                                                                                                                                                                                                                                    :::|||:::|||
652 GATTICCTTGTCTTGAACTTTAATCAAGACTTGCCAAAAGACTTGACTTCCAAGACAGAA 711
                                                                                                                                                                                                                                                                                                                                                                                                           285
                                                                                                                                                                                                                                                                                                                                                                                                                                                            305
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        LeuAlaHisArgCysGlnTrpValArgGluArgGlnGlyValSerTyrTyrAspAspSer 325
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         346 GlyLysLeuValLeuLeuAlaGlyGlyAspGlyLysGlyAlaAspPheHisAspLeuArg.365
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        366 GluProValAlaArgPheCysArgAlaValLeuLeuGlyArgAspAlaGlyLeuIle 385
                                                                                                                                                                             GAATICCAICCAGAGATIGCGGITATIACCAACCICAIGCCAACICAIAICGACIACCAI 591
                                                                                                                                                                                                                                                                                                                                                                                  807
                                                                                                                                                                                                                                                                                                                                                                                                                                  867
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                GCCAAGCTTCGTGATGTGGACAATCAAACCATCAAGGAAACTCTTTCAGCCTTCGGTGGT 927
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        LysAlaThrAsnValGlyAlaAlaLeuAlaAlaIleGluGlyLeuGlyAlaAspIleAsp 345
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         386 AlaGlnAlaLeuGlyAsnAla---ValProLeuValArgValAlaThrLeuAspGluAla 404
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         405 ValArgGlnAlaAlaGluLeuAlaArgGluGlyAspAlaValLeuLeuSerProAlaCys 424
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              444
                                                                                                                                                                                                                                                                                                                      712 GCCACTGTTGTACCATTTTCAACA-----CTTGAAAAGGTTGAT------GGA
                                                                                                                GGGTCATTITCTGAATAIGTAGCAGCCAAGTGGAATATCCAGAACAAGATGACAGCT
                                                                                                                                                                                                                                                                                                                                                                                                      286 GlyHisAlaValGlyLeuProPheAspAlaMetLeuGlyAlaLeuLysAlaPheSerGly
                                                                                                                                                                                                     193 AspGlyMetAlaAspTyrH1sLeuAlaLysH1sArgIle------PheArgGlyAla
                                                                                                                                                                                                                                                       210 ArgGlnValValValAsnArgAlaAspAlaLeuThrArgProLeuIleAlaAspThr---
                                                                                                                                                                                                                                                                                                                                                                             754 GCTTATCTGGAAGATGGTCAA-----CTCTACTTCCGTGGTGAAGTAGTCATGGCAGCG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          425 AlaSerLeuAspMetPheLysAsnPheGluGluArgGlyArgLeuPheAlaLysAlaVal
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             1336 GCGGAGTTA 1344
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            GluGluLeu 447
                                                  135
                                                                                                    153
                                                                                                                                                                              532
                                                                                                                                                                                                                               392
                                                                                                                                                                                                                                                                                                        229
                                                                                                                                                                                                                                                                                                                                                        246
                                                                                                                                                                                                                                                                                                                                                                                                        266
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        306
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        326
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               988
                                                                      8
                                                                                                                                                                         a
                                                                                                                                                                                                      ò
                                                                                                                                                                                                                            g
 à
                          셤
                                                 ò
                                                                                                    ò
                                                                                                                         셤
                                                                                                                                                  ð
                                                                                                                                                                                                                                                     ò
                                                                                                                                                                                                                                                                           g
                                                                                                                                                                                                                                                                                                        ò
                                                                                                                                                                                                                                                                                                                          g
                                                                                                                                                                                                                                                                                                                                                     ò
                                                                                                                                                                                                                                                                                                                                                                             g
                                                                                                                                                                                                                                                                                                                                                                                                       ò
                                                                                                                                                                                                                                                                                                                                                                                                                           a
                                                                                                                                                                                                                                                                                                                                                                                                                                                       à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                             8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        õ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ç
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            à
```

```
:::|||||||
133 GACAATCCAGCTGCCCAAGTTTGCTGGAA------GAAGGGATCAAGGTCATTACA 183
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          73 GCTCGTTTGTTGGACAAGCTAGGTGCCATTGTGACAGTAAATGATGGGAAACCTTTCGAG 132
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ---AATCCAGGTATCCCCTACAACAATCCCATGATTGAAAAGGCTTTGGCCAAGAGAATT 291
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        95 ArgileSerGlyAspileAspLeuPheAlaArgGluAlaLysAlaProileValAlaile 114
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     184 GGTGGCCATCCTTGGAACTCTTGGATGAAGAGTTTGCCCTTATGGTGAA----- 234
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              75 ValSerProGlyLeuSerLeuArgThrProAlaLeuValGlnAlaAlaAlaLysGlyVal 94
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               7 AspHisPheArg-----IleValValGlyLeuGlyLysSerGlyMetSerLeu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            40 GluAsnProProGluLeuAlaThrLeuArgAlaGlnTyrProGlnValGluValArgCys
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     23 ValArgTyrLeuAlaArgArgGlyLeuProPheAlaValValAspThrArg-----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        GlyGlu--------LeuAspAlaGluPheLeuCysSerAlaArgGluLeuTyr
                                                                                                                                                                                                                                                               APPLICANT: Xu, H. Howard
TITLE OF INVENTION: Identification of Essential Genes in
TITLE OF INVENTION: Prokaryotes
FILE REFERENCE: ELITRA.011A
CURRENT APPLICATION NUMBER: US/09/815,242
CURRENT APPLICATION NUMBER: 60/21,078
PRIOR APPLICATION NUMBER: 60/21,078
PRIOR FILING DATE: 2000-03-21
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Length:
Matches:
Conservative:
Mismatches:
Indels:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             US-09-701-229-2 (1-448) x US-09-815-242-9300 (1-1353)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     NUMBER OF SEQ ID NOS: 14110
SOFTWARE: FastSEQ for Windows Version 4.0
SEQ ID NO 9300
ENGTH: 1353
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Gaps:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                            PRIOR APPLICATION NUMBER: 60/206,848
PRIOR FILING DATE: 2000-05-23
PRIOR PELLING DATE: 2000-05-23
PRIOR PILING DATE: 2000-05-26
PRIOR APPLICATION NUMBER: 60/242,578
PRIOR PILING DATE: 2000-10-23
PRIOR PILING DATE: 2000-11-27
PRIOR PILING DATE: 2000-11-27
PRIOR FILING DATE: 2000-12-27
PRIOR PILING DATE: 2000-12-27
PRIOR APPLICATION NUMBER: 60/257,931
PRIOR PILING DATE: 2000-12-22
PRIOR PILING DATE: 2001-02-16
US/09815242
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ORGANISM: Streptococcus pneumoniae
                                                                                                   APPLICANT: Ohlsen, Kari L.
APPLICANT: Zyskind, Judith W.
APPLICANT: Wall, Daniel
APPLICANT: Trawick, John D.
APPLICANT: Carr, Grant J.
APPLICANT: Yamamoto, Robert T.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      1.29e-59
586.50
52.92%
34.99%
25.95%
                                                                          APPLICANT: Haselbeck, Robert APPLICANT: Ohlsen, Kari L.
Sequence 9300, Application
Patent No. US20020061569Al
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  , LOCATION: (1)...(1353)
US-09-815-242-9300
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Percent Similarity:
Best Local Similarity:
Query.Match:
                                                    GENERAL INFORMATION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               NAME/KEY: CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Alignment Scores:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        à
```

74

11

```
GTAAAGGTTGTCGTGAATGACCAGCTGCCTTTT------GAGGAAAATGAA 141
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ACGACAACGACAAAGGCTGTTATGAAATGCTGAAGGCCGATTCGAAAAAAGGCGCTCGTT 432
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            GlyGlyAsnLeuGlyThrProAlaLeuAspLeuLeu----AlaAspAspIleGluLeu 158
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            AlaThrValLeuAsnValSerGluAspHisMetAspArgTyrAspGlyMetAlaAspTyr 198
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            TATGAAAACGTGATGGTCGAAGAAGCGCTGAAGCGGGGTATCCCGGTCTGGACGAGGTTT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    :::||| :::||| 313 GAACTCGCCTATCATCTGACAGAAGGAAAG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 LeuArgThrProAlaLeuValGlnAlaAlaAlaLysGlyValArgIleSerGlyAspIle
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ValArgTyrLeuAlaArgArgGlyLeuProPheAlaValValAspThrArgGluAsnPro
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ProGluLeualaThrLeuargalaGlnTyrProGlnValGluValArgCysGlyGluLeu
||| ::: ||| ::: |||||
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                AspLeuPheAlaArgGluAlaLysAlaProIleValAlaIleThrGlySerAsnAlaLys
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          TyrValLeuGluLeuSerSerPheGlnLeuGluThrCysAspArgLeuAsnAlaGluVal
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          37 CTCGTACTGGGGCTGGCGAAAAGCGGATATGCTGCCGCTTCGATCCTTCATGAGAAATGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      63 AspAlaGluPhe-----LeuCysSerAlaArgGluLeuTyrValSerProGlyLeuSer
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              SerThrValThrLeuValGlyGluMetAlaValAlaAlaAspLysArgValAlaVal
                                                                                                                   APPLICANT: Clausen, Ib Groth
TITLE OF INVENTION: Methods For Monitoring Multiple Gene
TITLE OF INVENTION: Expression
TITLE OF INVENTION: Expression
FILE REFERENCE: 10085.500-US
CURRENT APPLICATION NUMBER: US/09/974,300
CURRENT FILING DATE: 2001-10-05
PRIOR FILING DATE: 2000-10-06
PRIOR FILING DATE: 2000-10-06
PRIOR FILING DATE: 2000-10-06
PRIOR FILING DATE: 2000-10-05
NUMBER OF SEQ ID NOS: 8481
                                                                                                                                                                                                                                                                                                                                                                                                                                                   Conservative:
Mismatches:
Indels:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                US-09-701-229-2 (1-448) x US-09-974-300-1685 (1-1352
                                                                                                                                                                                                                                                                                                                                                                                                                        Length:
Matches:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             11 IleValValGlyLeuGlyLysSerGlyMetSer
                                                                                                                                                                                                                                                                                               4.0
                                                                                                                                                                                                                                                                                            SOFTWARE: FastSEQ for Windows Version
SEQ ID NO 1685
                                                            US/09974300
                                                                                                                                                                                                                                                                                                                                                          ; ORGANISM: Bacillus licheniformis US-09-974-300-1685
                                                                                                                                                                                                                                                                                                                                                                                                                                     534.50
50.32%
33.48%
23.65%
                                                            Sequence 1685, Application
Patent No. US20020146721A1
GENERAL INFORMATION:
APPLICANT: Berka, Randy M.
 GCGGAGTTA 1344
                                                                                                                                                                                                                                                                                                                                                                                                                                              Percent Similarity:
Best Local Similarity:
Query Match:
                                                                                                                                                                                                                                                                                                                                                                                                         Alignment Scores:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         43
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         23
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        97
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      142
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 253
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            141
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           433
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   81
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             373
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      179
                                                                                                                                                                                                                                                                                                                                              TYPE: DNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               101
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              121
                                                                                                                                                                                                                                                                                                                                                                                                                         No.:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ŏ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      OD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ŏ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ŏ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Óγ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     471
                                                                                                                                                                                                                                                                                              209
                                                                                                                                                                                                                                                                                                                                                                                                                      245
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              285
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            305
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            424
                                                                                                                                                                                                                                                                                                                           651
                                                                                                                                                                                                                                                                                                                                                                         246 LeulleGluGluAspGlyGlnLysTrpLeuAlaPheGlnPheAspLysLeuLeuProVal 265
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 807
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             867
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         927
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       LeuAlaHisArgCysGlnTrpValArgGluArgGlnGlyValSerTyrTyrAspAspSer 325
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      987
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                404
                                                               135 AsplysArgValAlaValGlyGlyAsnLeuGlyThrProAlaLeuAspLeu-----Leu 152
                                                                                                                                                                    AlaAspAspIleGluLeuTyrValLeuGluLeuSerSerPheGlnLeuGluThrCysAsp 172
                                                                                                                                                                                                   531
                                                                                                                                                                                                                                                               591
                                                                                                                                                                                                                                                                                                                                                                                                                                                   712 GCCACTGTTGTACCATTTTCAACA-----CTTGAAAAGGTTGAT-------GGA 753
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     LysalaThrasnValGlyalaAlaLeuAlaAlaIleGluGlyLeuGlyAlaAspIleAsp 345
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             266 GlyGluLeuLysIleArgGlyAlaHisAsnTyrSerAsnAlaLeuAlaAlaLeuAlaLeu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      156 AAACGGCAGCAGACAAGGCTGGTGTCGCTTATGTGGAGGCGACAGATATTGCAGATGCG
ThrGlySerAsnAlaLysSerThrValThrThrLeuValGlyGluMetAlaValAlaAla
                                                                                                                        GGGCAACATGTCTTTTATCAGGAATATCGGCTATCCTGCCCAGTCAGGTTGCTCAAATA
                                                                                                                                                                                      173 ArgLeuAsnAlaGluValAlaThrValLeuAsnValSerGluAspHisMetAspArgTyr
                                                                                                                                                                                                                                                             532 GAATTCCATCCAGAGATTGCGGTTATTACCAACCTCATGCCAACTCATATCGACTACCAT
                                                                                                                                                                                                                                                                                            AspGlyMetAlaAspTyrHisLeuAlaLysHisArgIle------PheArgGlyAla
                                                                                                                                                                                                                                                                                                                                                       210 ArgGlnValValValAsnArgAlaAspAlaLeuThrArgProLeuIleAlaAspThr---
                                                                                                                                                                                                                                                                                                                                                                                                                      ------ValProCysTrpSerPheGlyLeuAsnLysProAspPheLysAlaPheGly
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    GCTTATCTGGAAGATGGTCAA-----CTCTACTTCGGTGTGAAGTAGTCATGGCAGCG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               808 AATGAAATGGGTGTTCCAGGTAGCCACAATGTGGAAAATGCCCTTGCGACTATTGCTGTA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           286 GlyHisAlaValGlyLeuProPheAspAlaMetLeuGlyAlaLeuLysAlaPheSerGly
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        GCCAAGCTTCGTGATGTGGACAATCAAACCATCAAGGAAACTCTTTCAGCCTTCGGTGGT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 928 GTCAAACACCGTCTCCAGTTTGTGGATGACATCAAGGGTGTTAAATTCTATAACGACAGT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             GluProValAlaArgPheCysArgAlaValValLeuLeuGlyArgAspAlaGlyLeuIle
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              386 AlaGlnAlaLeuGlyAsnAla---ValProLeuValArgValAlaThrLeuAspGluAla
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ValArgGlnAlaAlaGluLeuAlaArgGluGlyAspAlaValLeuLeuSerProAlaCys
                                                                                                                                                                                                                                                                                                                         592 GGGTCATTTTCTGAATATGTAGCAGCCAAGTGGAATATCCAGAACAAGATGACAGCAGCT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    445 GluGluLeu 447
                                                                                                                                                                    153
                                                                                                                                                                                                 472
                                                                                                                                                                                                                                                                                                                                                                                                                    229
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               754
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       306
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        g
                                                                         g
                                                                                                 ŏ
                                                                                                                              셤
                                                                                                                                                                  ò
                                                                                                                                                                                         a
                                                                                                                                                                                                                         à
                                                                                                                                                                                                                                                        g
                                                                                                                                                                                                                                                                                  ò
                                                                                                                                                                                                                                                                                                                g
                                                                                                                                                                                                                                                                                                                                                       ò
                                                                                                                                                                                                                                                                                                                                                                             g
                                                                                                                                                                                                                                                                                                                                                                                                                 ò
                                                                                                                                                                                                                                                                                                                                                                                                                                             g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                               δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              δý
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ŏ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     g
                                          ò
```

140

192

62

42

22 96 252 100 312 120

```
------ValAlaIleThrGlySerAsnAl 119
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            86 uValGlnAlaAlaAlaLysGlyValArgIleSerGlyAspIleAspLeuPheAlaArgGl 106
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  119 aLysSerThrValThrTeuValGlyGluMetAlaValAlaAlaAspLysArgValAl 139
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         139 aValGlyGlyAsnLeuGlyThrProAlaLeuAspLeuLeuAlaAspAspIleGluLeuTy 159
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  159 rValLeuGluLeuSerSerPheGlnLeuGluThrCysAspArgLeuAsnAlaGluValAl 179
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               179 aThrValLeuAsnValSerGluAspHisMetAspArgTyrAspGlyMetAlaAspTyrHi 199
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             11 IleValValGlyLeuGlyLysSerGlyMetSerLeuValArgTyrLeuAlaArgArgGly
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   31 LeuProPhealaValValAspThrArgGluAsnProProGluLeuAlaThrLeuArgAla
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            369 CAAGACCACGACGTCGATGCTGCACGCCATGCTGATCGCCCGTGGCCGCCGTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            489 GGCCGTGGAGTTGTCCAGTTTCCAGCTGCACTGGGCGCCGTCGCTGCGGCCCGAGGCCGG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      94 GCGACGCCGACGGTGTGCGAC----GACGATCCGGTCATGCTGCGA------
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            GlnTyrProGlnValGlu-ValArgCysGlyGluLeuAspAlaGluPheLeuCysSer--
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     190 ATAACCGGGTATGCGCTG-GTGGTCGCCAGTCCCGGCTTCTCGCCCGCAACCCCGGTACT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                34 TIGGIAGCCGGIGGCCGGGTGACCGGTCAGGCGGTGGCCGCGGGTGCTCGGTTTGGT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      -----AlaArgGluLeuTyrValSerProGlyLeuSerLeuArgThrProAlaLe
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           1461
167
62
182
84
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Conservative:
Mismatches:
Indels:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          US-09-701-229-2 (1-448) x US-09-712-363-79 (1-1461)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Length:
Matches:
             PRIOR APPLICATION NUMBER: 60/179, 531
PRIOR FILING DATE: 2000-02-01
PRIOR FILING DATE: 1909-01-29
PRIOR FILING DATE: 1999-01-29
PRIOR PLING DATE: 1999-01-29
PRIOR PLING DATE: 1999-02-01
PRIOR PLING DATE: 1999-03-06
PRIOR PLING DATE: 1999-03-26
PRIOR PLING DATE: 1999-03-26
PRIOR PLING DATE: 1999-05-14
PRIOR APPLICATION NUMBER: 60/134, 093
PRIOR PLING DATE: 1999-05-14
PRIOR PLING DATE: 1999-05-14
PRIOR PLING DATE: 1999-05-14
PRIOR PLING DATE: 1999-11-12
PRIOR PRIOR DATE: 1999-11-12
PRIOR PRING DATE: 1999-11-12
PRIOR PRING DATE: 1999-11-12
PRIOR PRING DATE: 1999-11-12
                                                                                                                                                                                                                                                                                                                                                                                                                  ; ORGANISM: Mycobacterium tuberculosis
US-09-712-363-79
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     106 uAlaLysAlaProIle-----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         2.89e-52
525.00
46.36%
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             33.81% 23.23%
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Best Local Similarity:
Query Match:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Percent Similarity:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Alignment Scores:
                                                                                                                                                                                                                                                                                                                                                                               1461
                                                                                                                                                                                                                                                                                                                                                            SEQ ID NO 79
                                                                                                                                                                                                                                                                                                                                                                                               TYPE: DNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            51
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    70
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               임
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 윱
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            엄
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            å
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                1104
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ACAAACATT-----CTTGCGACGAAAAAAGCGCTGTCCGCC---TTTCAAAAGCCG 1047
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                216 ArgAlaAspAlaLeuThrArgProLeuIleAlaAspThrValProCysTrpSerPheGly 235
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ThrAsnValGlyAlaAlaLeuAlaAlaIleGluGlyLeuGlyAlaAspIleAspGlyLys 347
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             368 ValAlaArgPheCysArgAlaValValLeuLeuGlyArgAspAla-----GlyLeu 384
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    424
                                                                                                                                                                                                         ------GlyLeuIle 247
                                                                                                                                                                                                                                                                                                                                                      LeuLysIleArgGlyAlaHisAsnTyrSerAsnAlaLeuAlaAlaLeuAlaLeuGlyHis 287
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          327
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         LeuValLeuLeuAlaGlyGlyAspGlyLysGlyAlaAspPheHisAspLeuArgGluPro 367
                                                                                                                                                                                                                                                                               GluGluAspGlyGlnLysTrpLeuAlaPheGlnPheAspLysLeuLeuProValGlyGlu 267
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        AlaSerLeuAspMetPheLysAsnPheGluGluArgGlyArgLeuPheAlaLysAlaVal 444
                                                                              GGATTATTATTAAACGTATTTGATGCCCATCTCGATTATCACCATTCGCGCAAAATTAT
                                                                                                                                                                                                                                                                                                           288 AlaValGlyLeuProPheAspAlaMetLeuGlyAlaLeuLysAlaPheSerGlyLeuAla
                                                                                                                                                                                                                                                                                                                                                                                                                                                    HisargCysGlnTrpValargGluargGlnGlyValSerTyrTyrAspAspSerLysAla
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                405 ValArgGlnAlaAlaGluLeuAlaArgGluGlyAspAlaValLeuLeuSerProAlaCys
                                                                                                                                                                                                                                        ---TCAAAAGCGGAGAAGGTGTATTTTTCGGTCCGCCGGACACTTGAGCGCGGAGCGTGC
                                                                                                                                                                                                                                                                                                                                                                                         GTCGTTTTGCCGGGAGAGCACAATTTGGAGAACATTTTGGCCGCCCTTTGCATCGTTAAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            GTCATTTTGCTGGCAGGGGGCTTGACCGCGGAAATGAATTTGATGAACTAAAG---CCG
                                                    HisLeuAlaLysHisArgIlePheArgGlyAlaArgGln------ValValValAsn
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        385 IlealaGlnalaLeuGlyAsnalaValProLeuValArgValAlaThrLeuAspGluAla
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   1222 GCAACTGCGGCGTTCAGCCTGTCAGACGAAGGAGATGTCATTCTTCTGTCCCCGGCCTGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Sequence 79, Application US/09712363

Patent No. US20020164588A1

GENERAL INFORMATION:

APPLICANT: Elsenberg, David

APPLICANT: Elsenberg, David

APPLICANT: Elsenberg, Edward M.

TITLE OF INVENTION: DETERMINING THE FUNCTIONS AND

TITLE OF INVENTION: INTERATIONS OF PROTEINS BY COMPARATIVE ANALYSIS

FILE REFERENCE: 07419-032001

CURRENT APPLICATION NUMBER: US/09/712,363

CURRENT PILING DATE: 2000-11-13

PRIOR APPLICATION NUMBER: PCT/US00/02246
                                                                                                                                                                      ---GAGACAGTCGTCCGCGCAGTGT------
                                                                                                                                                                                                         LeuAsnLysProAspPheLysAlaPhe----
                                                                                                                                                                  TTGGACGAT-----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |||
| 1342 CATATGCTT 1350
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 GluGluLeu 447
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             US-09-712-363-79
                                                                                                                                                                                                                                                                               248
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    0001
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            1048
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     1105
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        425
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   445
                                                    661
                                                                                         613
                                                                                                                                                                                                                                          602
                                                                                                                                                                                                                                                                                                                                                                                           820
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    308
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          940
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               328
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         348
                                                                                                                           ò
                                                                                                                                                            д.
У
                                                                                                                                                                                                                                셤
                                                                                                                                                                                                                                                                       ò
                                                                                                                                                                                                                                                                                                           g
                                                                                                                                                                                                                                                                                                                                                                               셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 g
               셤
                                                    à
                                                                                      g
                                                                                                                                                                                                                                                                                                                                          õ
                                                                                                                                                                                                                                                                                                                                                                                                                              õ
                                                                                                                                                                                                                                                                                                                                                                                                                                                     셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ð
```

69

20

30

248

368

428

488

```
; ORGANISM: Enterococcus faecalis
US-09-815-242-3936
  Yamamoto, Robert T.
                                                                                                                                                                                                                                                                                                                                                                                                               1.36e-51
519.00
51.09%
33.04%
                                                                                                                                                                                                                                                                                                                                                                                                                                          Percent Similarity:
Best Local Similarity:
                                                                                                                                                                                                                                                                                                      SOFTWARE: Fast:
SEQ ID NO 3936
LENGTH: 1368
                                                                                                                                                                                                                                                                                                                                                                                                    Alignment Scores:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             382
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          31
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              157
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     26
                                                                                                                                                                                                                                                                                                                                               TYPE: DNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Query Match:
DB:
                                                                                                                                                                                                                                                                                                                                                                                                                  ..
9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                - Q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 οχ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          QΩ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       οy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 å
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ŏ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |||||
|1164 GTTATCACGACACGCCCGATGTCCCAGTCGTTCAGGTTGTGGCCAGGCGAGGATACTGG 1223
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 1343
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         1050 GATCGCCGGTGGCCTGCTCAAGGGCGCGTCGCTTCAC-----GCCGAGGTTGCGGCGAT 1103
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            1224 TATGCCTGCGACTGTTGAGGTTCCTGTTGCTTGTGTTCTAGATGTGGCAAAAGATGACAA 1283
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        388
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       411
                                                                                                                                                                                                                                                                                                                                                                                                                                                                  350 uLeuAlaGlyGlyAspGlyLysGlyAlaAspPheHisAspLeuArgGluProValAlaAr 370
                                                                                                                                                                                        251 yGlnLysTrpLeuAlaPheGlnPheAsp---LysLeuLeuProValGlyGluLeuLysIl 270
                                                                                                                                                                                                                                             270 eArgGlyAlaHisAsnTyrSerAsnAlaLeuAlaAlaLeuAlaLeuGlyHisAlaValGl 290
                                                                                                                                                                                                                                                                                                   290 yLeuProPheAspAlaMetLeuGlyAlaLeuLysAlaPheSerGlyLeuAlaHisArgCy 310
                                                                                                                                                                                                                                                                                                                                                         310 sGlnTrpValArgGluArgGlnGlyValSerTyrTyrAspAspSerLysAlaThrAsnVa 330
                                                                                                                                                                                                                                                                                                                                                                                                              330 lGlyalaalaLeuAlaalaIleGluGlyLeuGlyAlaAspIleAspGlyLysLeuValLe 350
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                398
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           uAlaArgGluGlyAspAlaValLeuLeuSerProAlaCysAlaSerLeuAspMetPheLy 431
                                                                                                                                     uAsnLysProAspPheLysAlaPheGly-------LeuIleGluGluAspGl 251
549 CGCGGTGCTCAACATTGCCGAAGACCACCTGGACTGGCATGCCACGATGGCCGAATACAC
                                      609 CGCGGCCAAGGCCCGGGTGCTGACCGGCGGGC----GTAGCGGTGGCCGGGCTGGATGA
                                                                                                                                                                                                                                                              370 gPheCysArgAlaVal-----ValLeuLeuGlyArgAspAlaGlyLeuIleAlaGlnAl
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              sLeuAlaLysHisArgIlePheArgGlyAlaArgGlnValValValAsnArgAlaAspAl
                                                                              219 aLeuThrArgProLeuIleAlaAspThrValProCysTrp-----SerPheGlyLe
                                                                                                         663 CAGCCGAGCGGCCGCACTGCTGGACGCCTCACCGGCGCAGGTGCGGGTCGGCTTCCGGCT
                                                                                                                                                               723 CGCCGAGCCGCCGCGCGGGAACTGGGCGTGCCGACGCCCACCTGGTCGATCGC----
                                                                                                                                                                                                                  868
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ---AlaThrLeuAspGluAlaValArgGlnAlaAlaGluLe
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               1404 CGGTTATGCCGACCGGGCGAGCATTCGCGACCGCGGTC 1443
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               431 sAsnPheGluGluArgGlyArgLeuPheAlaLysAlaVal 444
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             aLeuGlyAsn-----AlaValProLeuValArgVal---
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Sequence 3936, Application US/09815242
Patent No. US20020061569A1
GENERAL INFORMATION:
APPLICANT: Haselbeck, Robert
APPLICANT: Ohlsen, Kari L.
APPLICANT: Zyskind, Judith W.
APPLICANT: Wall, Daniel
APPLICANT: Wall, Daniel
APPLICANT: Carr, Grant J.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  US-09-815-242-3936
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             388
                                                                                                                                     38
                                                                                                                                                                                                                   778
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           411
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     RESULT 14
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 8
                                                    셤
                                                                         ŏ
                                                                                                    8
                                                                                                                                  δy
                                                                                                                                                        g
                                                                                                                                                                                δ
                                                                                                                                                                                                              g
                                                                                                                                                                                                                                            δ
                                                                                                                                                                                                                                                                 g
                                                                                                                                                                                                                                                                                            õ
                                                                                                                                                                                                                                                                                                                           g
                                                                                                                                                                                                                                                                                                                                                      ò
                                                                                                                                                                                                                                                                                                                                                                             q
                                                                                                                                                                                                                                                                                                                                                                                                            δ
                                                                                                                                                                                                                                                                                                                                                                                                                                       g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                 δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ŏ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  qq
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         a
                           å
```

```
GCGCTCGTTACCGTTAATGACGCAAAACAATTTGATCAAAAACCCTGACGCCCAAGATTTA 156
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  157 TTAACCTTG------GGTATTCGTGTTACAGGGGGCATCCAATTGAA 201
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 125 ThrLeuValGlyGluMetAlaValAlaAlaAspLys-----ArgValAlaValGly 141
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                85 AlaLeuValGlnAlaAlaAlaLySGlyValArgIleSerGlyAspIleAspLeuPheAla 104
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        46 AlaThrLeuArgAlaGlnTyrProGlnValGluValArgCysGlyGluLeuAspAlaGlu 65
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |||::::::||| ::: ::: |||||||:::
ACGATGATTGGT---TTACTGCTAAACGCTGACAGAACGGCTGGTGAGGCACGTTTGGCG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  142 GlyAsnLeuGlyThrProAlaLeuAspLeu------LeuAlaAspAspIle
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           11 IleValValGlyLeuGlyLysSerGlyMetSerLeuValArgTyrLeuAlaArgArgGly
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            LeuPropheAlaValValAspThrArg------GluAsnPro-----ProGluLeu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   66 PheLeuCysSerAlaArgGluLeuTyrVal ---SerProGlyLeuSerLeuArgThrPro
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      105 ArgGluAlaLysAlaProIleValAlaIleThrGlySerAsnAlaLysSerThrValThr
                                      in
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1368
152
83
181
44
                                         Genes
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Conservative:
Mismatches:
Indels:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  US-09-701-229-2 (1-448) x US-09-815-242-3936 (1-1368)
                                      Essential
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Length:
Matches:
TITLE OF INVENTION: Identification of Essent.
TITLE OF INVENTION: Identification of Essent.
TITLE OF INVENTION: Prokaryotes
FILE REFERENCE: ELITRA.011A
CURRENT APPLICATION NUMBER: US/09/815,242
CURRENT FILING DATE: 2001-03-21
PRIOR PAPLICATION NUMBER: 60/191,078
PRIOR FILING DATE: 2000-05-23
PRIOR FILING DATE: 2000-05-23
PRIOR FILING DATE: 2000-05-23
PRIOR FILING DATE: 2000-05-24
PRIOR FILING DATE: 2000-10-23
PRIOR PRILIGATION NUMBER: 60/242,578
PRIOR PRILIG DATE: 2000-11-27
PRIOR FILING DATE: 2000-11-27
PRIOR FILING DATE: 2000-11-27
PRIOR FILING DATE: 2000-11-27
PRIOR APPLICATION NUMBER: 60/257,931
PRIOR FILING DATE: 2000-11-27
PRIOR APPLICATION NUMBER: 60/257,931
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   NUMBER OF SEQ ID NOS: 14110
SOFTWARE: FastSEQ for Windows Version 4.0
```

96

45

321

124 381

261

84

```
NAME/KEY: CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                     Alignment Scores
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    157
                                                                                                                                                                                                                                                                                                                                                          FEATURE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Query Match
                                                                                                                                                                                                                                                                                                           LENGTH
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         õ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ద
                                                                                                                                                                                                                                                                                                                                                                                                                                                         1057 TTACTTGCGGGTGGCTTGGACCGCGGTAACTCATTTGATGAATTG---GTTCCTGCTCTG 1113
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           1114 CTGGGACTCAAAGCAATTGTTTATTTGGAGAAACCAAAGAAAATTGGCGGAAGCTGCT 1173
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1174 AAAAAAGCGAACATTGAAACAATTTTATTTGCTGAAAATGTTCAAACGGCGGTTACCATT 1233
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ValGlyAlaAlaLeuAlaAlaIleGluGlyLeuGlyAlaAspIleAspGlyLysLeuVal 349
                                                                                                                      GAATATGTTGCTGCAAAATGGGCCATTCAAAAAACATGACCGTAGAGGACACCTTGATT 669
                                                                                                                                                         229
                                                                                                                                                                                                                                                                          AspGlyGlnLysTrpLeuAlaPheGlnPheAspLysLeuLeuProValGlyGluLeuLys 269
                                                                                                                                                                                                                                                                                                           825
                                                                                                                                                                                                                                                                                                                                                                                                                   LeuLeuAlaGlyGlyAspGlyLysGlyAlaAspPheHisAspLeuArgGluProValAla 369
-----GTGATGGAACTTTCTAGTTTTCAGTTAATGGGAATTGAGACGTTTCACCCA 549
                                                                                                                                                                                                                ProCysTrpSerPheGlyLeuAsnLysProAspPheLysAlaPheGlyLeuIleGluGlu 249
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         -----GlyAsnAlaValProLeuValArgValAlaThrLeuAspGluAlaValArgGln 407
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  428 AspMetPheLysAsnPheGluGluArgGlyArgLeuPheAlaLysAlaValGluGluLeu 447
                                                                                                                                                                         :::||||
TAAATTGGAATCAAGTAGAGCTTCAAACGTTAGCCAAAACCACAGCTGCCAACGTATTG
                                                                                                                                                                                                                                                                                                                                                     |||| ||||:::|||||||
826 ATTCCTGGTAGTCACAATATTGAAAATGCACTCGCAGCGATTTGTGTAGCTAAATTAAAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            370 ArgPheCysArgAlaValValLeuLeuGlyArgAspAlaGlyLeuIleAlaGlnAlaLeu
                                                 ValAsn------ArgAlaAspAlaLeuThrArgProLeuIleAlaAspThrVal
                                                                                                                                                                                                                                       CCT-----TITICAACGAAAGAAGCAGTAGAAGGGGCTTATTTA-----
                                                                                                                                                                                                                                                                                                       772 GATGGGAAA----TTATATTTTAATGAAGAATATATATGCCCGCCGATGAGCG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              177 GluValAlaThrValLeuAsnValSerGluAspHisMetAspArgTyrAspGlyMetAla
                                                                                          197 AspTyrHisLeuAlaLysHisArgIlePheArgGlyAlaArg-----GlnValVal
                                                                                                                                                                                                                                                                                                                                     270 IleargGlyAlaHisAsnTyrSerAsnAlaLeuAlaAlaLeuAlaLeuGlyHisAlaVal
                                                                                                                                                                                                                                                                                                                                                                                                 290 GlyLeuProPheAspAlaMetLeuGlyAlaLeuLysAlaPheSerGlyLeuAlaHisArg
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     AlaalaGluLeuAlaArgGluGlyAspAlaValLeuLeuSerProAlaCysAlaSerLeu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ļ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                APPLICANT: Mall, Daniel
APPLICANT: Trawick, John D.
APPLICANT: Carr, Grant J.
APPLICANT: Yamamoto, Robert T.
APPLICANT: Xu, H. Howard
TITLE OF INVENTION: Identification of Essential Genes
TITLE OF INVENTION: Prokaryotes
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Sequence 6539, Application US/09815242
Patent No. US20020061569A1
GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      APPLICANT: Haselbeck, Robert
APPLICANT: Ohlsen, Kari L.
APPLICANT: Zyskind, Judith W.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             US-09-815-242-6539
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    APPLICANT:
APPLICANT:
APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   350
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         390
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       408
                                                                                                                         610
                                                                                                                                                     214
                                                                                                                                                                                  670
                                                                                                                                                                                                                230
                                                                                                                                                                                                                                             730
                                                                                                                                                                                                                                                                          250
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       330
                                                                                                                                                                                                                                                                                                g
                                                                                                                                                                                                                                                                                                                                                                                                                             셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        셤
 음
                                                              윱
                                                                                       à
                                                                                                                    셤
                                                                                                                                                    ö
                                                                                                                                                                            a
                                                                                                                                                                                                               ö
                                                                                                                                                                                                                                        a
                                                                                                                                                                                                                                                                        ö
                                                                                                                                                                                                                                                                                                                                     à
                                                                                                                                                                                                                                                                                                                                                                g
                                                                                                                                                                                                                                                                                                                                                                                                ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                            ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          윱
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ð
                               à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       à
```

```
97 GCGCTCGTTACCGTTAATGACGCAAAACAATTTGATCAAAACCCTGACGCCCAAGATTTA 156
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  439 GGAAATATTGGTTTTCCAGCGAGTACGGTGGCTCAAGAAGCAACGGCCAAGGATGATCTT 498
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             -----GIGAIGGAACTITCTAGITTICAGITAAIGGGAAITGAGACGITICACCCA 549
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            157 TTAACCTTG---------GGTATTCGTGTTGTTACAGGGGGGCATCCAATTGAA 201
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     85 AlaLeuvalGlnAlaAlaAlaLysGlyValArgIleSerGlyAspIleAspLeuPheAla 104
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     125 ThrLeuvalGlyGluMetAlavalAlaAlaAspLys-----ArgvalAlaValGly 141
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  142 GlyAsnLeuGlyThrProAlaLeuAspLeu--------------LeuAlaAspAspIle 156
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  GluLeuTyrValLeuGluLeuSerSerPheGlnLeuGluThrCysAspArgLeuAsnAla 176
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             11 IlevalvalGlyLeuGlyLysSerGlyMetSerLeuValArgTyrLeuAlaArgArgGly
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       31 LeuProPheAlaValValAspThrArg------GluAsnPro-----ProGluLeu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          262 CTTGTGGCAGAAGCACTAACTCGGAAAATTCCTATCATAACTGAGGTGGAATTAGCAGGT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     105 ArgGluAlaLysAlaProlleValAlaIleThrGlySerAsnAlaLysSerThrValThr
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                46 AlaThrLeuArgAlaGlnTyrProGlnValGluValArgCysGlyGluLeuAspAlaGlu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       66 PheLeuCysSerAlaArgGluLeuTyrVal --- SerProGlyLeuSerLeuArgThrPro
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Conservative:
Mismatches:
Indels:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     US-09-701-229-2 (1-448) x US-09-815-242-6539 (1-1371)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Length:
Matches:
                                                                                                                                                                                                                                                                                                                                                                                                                                                          NUMBER OF SEQ ID NOS: 14110
SOFTWARE: FastSEQ for Windows Version 4.0
SEQ ID NO 6539
           US/09/815,242
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Gaps:
CURRENT APPLICATION NUMBER: US/09/815,2
CURRENT FILING DATE: 2001-03-21
PRIOR APPLICATION NUMBER: 60/191,078
PRIOR PELICATION NUMBER: 60/206,848
PRIOR PELICATION NUMBER: 60/207,727
PRIOR PELICATION NUMBER: 60/207,727
PRIOR PELICATION NUMBER: 60/207,727
PRIOR PILING DATE: 2000-05-26
PRIOR PILING DATE: 2000-10-23
PRIOR FILING DATE: 2000-11-27
PRIOR FILING DATE: 2000-12-22
PRIOR FILING DATE: 2000-12-22
PRIOR FILING DATE: 2000-12-22
PRIOR FILING DATE: 2000-12-22
PRIOR FILING DATE: 2001-02-16
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        TYPE: DNA ORGANISM: Enterococcus faecalis
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               1.36e-51
519.00
51.09%
33.04%
22.96%
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        , LOCATION: (1)...(1371)
US-09-815-242-6539
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Percent Similarity:
Best Local Similarity:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        499
```

65

84

												•	
196 609	213	. 525	249	269 825	289	309	329 1005	349 1056	369 1113	389	407	427	447 1353
GluValalaThrValLeuAsnValSerGluAspHisMetAspArgTyrAspGlyMetAla  :::::     ::      ::               ::   CAAATTGCAGTAATTACAAATATTTTGAAGCACACTTGGATTATCATGGTTCGCGGAAA	AspTyrHisLeuAlaLysHisArgIlePheArgGlyAlaArgGlnValValVal 	ValAsnArgAlaAspAlaLeuThrArgProLeuIleAlaAspThrVal 	ProcysTrpSerPheGlyLeuAsnLysProAspPheLysAlaPheGlyLeulleGluGlu	AspdlyglnLysTrpLeuAlaPheGlnPheAspLysLeuLeuProValGlyGluLeuLys 	IleargGlyalaHisasnTyrSerasnAlaLeuAlaalaLeuAlaLeuGlyHisAlaVal 	GlyLeuProPheAspAlaMetLeuGlyAlaLeuLysAlaPheSerGlyLeuAlaHisArg 	Cyscintrpvalargciudrycinciyvalsertyrtyraspaspsertysalathrasn 329 	ValGlyAlaAlaLeuAlaAlaIleGluGlyLeuGlyAlaAspIleAspGlyLysLeuVal :::	LeuLeualaGlyGlyAspGlyLysGlyAlaaspPheHisAspLeuArgGluProValAla 	ArgPheCysArgAlaValValLeuLeuGlyArgAspAlaGlyLeuIleAlaGlnAlaLeu 	GlyasnalavalproLeuvalargvalalathrLeuaspGlualavalargGln 	AlaalaGluLeuAlaargGluGlyAspAlaValLeuLeuSerProAlaCysAlaSerLeu 	AspWetPheLysAsnPheGluGluArgGlyArgLeuPheAlaLysAlaValGluGluLeu     :::                      :::
177	197	214	230	250	270	290	310	330	350 1057	370	390	408	1294
Qy Dp	. <b>6</b> 2 d	oy Op	Qy Dp	oy Op	65 64 Dp 64	oy Op	oy op	Oy Op	oy Qq	Oy Dp	O.Y	o da	oy Dp

Search completed: August 14, 2003, 11:04:37 Job time: 6736 secs

THIS PAGE BLANK (USPTO)

```
GenCore version 5.1.6 Copyright (c) 1993 - 2003 Compugen Ltd.
```

```
OM protein - nucleic search, using frame_plus_p2n model

Run on: August 14, 2003, 07:04:21; Search time 2292 Seconds
(**Ithout alignments)
4750.613 Million cell updates/sec
Title: US-09-701-229-2
Perfect score: 2260
Sequence: 1 MSLIASDHFRIVVGLGKSGM.....MFKNFEERGRLFAKAVEELA 448
```

Scoring table: BLOSUM62
Scoring table: BLOSUM62
Scoring table: BLOSUM62
Xgapop 10.0 , Xgapext 0.5
Ygapop 10.0 , Ygapext 7.0
Fgapop 6.0 , Fgapext 7.0
Fgapop 6.0 , Delext 7.0
Fgapop 6.0 , Later 7.0
Searched: 22781392 seqs, 12152238056 residues
Total number of hits satisfying chosen parameters: 45546872
Minimum DB seq length: 25
Maximum DB seq length: 2000000000

Post-processing: Minimum Match 0%

Maximum Match 100%

Listing first 45 summaries

Listing first 45 summaries

Command line parameters:

-WODEL-frame+\_p2n.model -DEV-xlp
-Q-WODEL-frame+\_p2n.model -DEV-xlp
-Q-Q-QST0\_1/USF70\_spool/US09701229/runat\_09082003\_161157\_4393/app\_query.fasta\_1.647
-DB-EST -QFMT-fastap -SUFFIX-p2n.rst -MINMATCH-0.1 -LOOPCL-0 -LOOPEXT-0
-UNTS-b-Lis -START-1 - MATRIX-blosun62 - TRANS-human40.cdi -LIST-45
-UNCTALIGN-200 -THR.SCORE-pct -THR.MAX-100 -THR.MIN-0 -ALIGN-15.-MODE-LOCAL
-OUTFMT-pto -NORM-ext -HEAPSIZE-500 -MINLEN-25 -MAXLEN-200000000
-USER-US09701229\_gCGN 1\_1\_4237\_grunat\_09083003\_161157\_4393 -NCPU-6 -ICPU-3
-NO MMAP -LARGEQUERY -NEG SCORES-0 -WAIT -DSPBLOCK=100 -LONGLOG
-DEV\_TIMEOUT-120 -WARN\_TIMEOUT-30 -THREADS-1 -XGAPOP-10 -XGAPEXT-0.5 -FGAPOP=6
-FGAPEXT-7 -YGAPOP=10 -YGAPEXT-0.5 -DELOP=6 -DELEXT-7

ESI:\*

Database:

1: em\_estba:\*
2: em\_esthun:\*
3: em\_esthun:\*
4: em\_esthun:\*
5: em\_esthun:\*
6: em\_esto:\*
7: em\_esto:\*
7: em\_esto:\*
8: em\_htc:\*
9: 9D\_est1:\*
10: 9D\_est2:\*
11: 9D\_htc:\*
12: 9D\_est2:\*
13: 9D\_est2:\*
14: 9D\_est2:\*
15: em\_estom:\*
16: em\_estom:\*
16: em\_estom:\*
17: em\_gss\_hun:\*
18: em\_gss\_hun:\*
18: em\_gss\_hun:\*
19: em\_gss\_hun:\*
20: em\_gss\_hun:\*
21: em\_gss\_hun:\*
22: em\_gss\_hun:\*
23: em\_gss\_hun:\*
24: em\_gss\_hun:\*
25: em\_gss\_hun:\*
26: em\_gss\_hun:\*
27: em\_gss\_hun:\*
27: em\_gss\_hun:\*
28: em\_gss\_hun:\*
29: em\_gss\_hun:\*
20: em\_gss\_hun:\*
20: em\_gss\_hun:\*
20: em\_gss\_hun:\*
20: em\_gss\_hun:\*
21: em\_gss\_hun:\*
22: em\_gss\_hun:\*
23: em\_gss\_hun:\*
24: em\_gss\_hun:\*

em\_gss\_vrl:\* gb\_gssl:\*

## 29: gb\_gss2:\*

Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

## SUMMARIES

.*	Description		Valle msn2_620	אט עטע	Sago bacsz-To	040/4 FM4-HT00	0/00/ pacsz-10	74 YUL MG-ND-12	7204/ BUI/204	0/641 AG-ND-12	50283 pacs1-bu	5	<u>.</u>	₩.	⋍	χ.	$\sim$	Ψ.	~	₩.	~	12	7	~	$\Xi$	~	=	₩;	- :	CA548165 C0802A11-	2 :	,, ,	~ ~	``	125 pace 2-	7157 pacs1-	3865 rocket	740 OSJNE	191 909201	1958 EST050	3054 pacs2-	5245 TrEST-A1	050	1016 HV CFaOO	2884 page 1-60	065100 610010	reality studies	
SUMMARIES	ID	1 6	6/679	BZ268	B 12009	DELIGA	10079	BH3/4	Z/TOG Z	BH36/	BZ550	BH795	9 CNS07	9 CNS07	8 BH383	8 BH369	8 BH382	3 BQ504	0 BG592	8 AQ968	9 BZ572	9 BZ406	9 CC115	4 CB853	9 BZ675	6 CC063	AL7194	6 CC063	9 CC140	4 CA548165	CNSOL	D BEZIE	0 55/00	27/TG 7	0 P7550	9 B2557	2 PM320	4 CB650	AW2006	0 RE216	9 RZ563	DEMOTE C	DESCRIPTION OF	ACTE O	DF 204	20000	CNSOR	
	Length DB		769	υ.	7/1	7 0	0 5	* 0	D (	09/	4.6	7	25	in i	91	95	78	51	89	84	14	22	38	94	30	30	46	66	65	191	/18	л <del>-</del>	4 6	. T	201	2 2	522	850	7	. 4		192	1 5	000	ν α	2 6	77	
ø	Query Match					٠,	· .			· .	· .	•	•		•	•			•	•	٠	٠		٠	٠	٠	•	•	٠	5.1	٠	•	•	•	•		•		•	•	•	•	•		•		•	
	Score	1 6	TOR	1081.5	56	7	4 -	* *	2	n	7,	٠,	н,	8	18		$\sim$			3		$\sim$		124.5		$\sim$	•	7	٠.	114.5	, ;	1 2	9 2	103.5				[	5	•		; -	) C	) C	) C	) C	>	
	Result No.		٦ ·		n •					о с С	•	٠,	Η,	Η,	_	c 14		16	17	c 18	٦	20	c 21	22	23	24	c 25	7	c 27	c 58	N (	חרי	י ר	3 6	. ~	) (r	. ~	32	. ~	0.00	7	7	יי דר	• -	* ~	* *	<b>.</b>	

## ALIGNMENTS

~

Page

```
US-09-701-229-2 (1-448) x BZ568959
                                                                                                                                                                                                                                                                          Pseudomonas aeruginosa
Pseudomonas aeruginosa
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  1.49e-111
1081.50
87.63%
85.16%
47.85%
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  1. .1445
                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Class: shotgun.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Percent Similarity:
Best Local Similarity:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        308
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Scores:
                                                                                                                                                                                                                                                                GSS.
                                                                                   242
                                                                                                                                  262
                                                                                                                                                        127
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Query Match:
                                                                                                                                                                                RESULT 2
BZ568959/c
                                                                                                                                                                                                                                        ACCESSION
VERSION
KEYWORDS
SOURCE
ORGANISM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Pred. No.:
                                                                                                                                                                                                                  DEFINITION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        COUNT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Alignment
                                                                                                                                                                                                                                                                                                                                                                                JOURNAL
                                                                                                                                                                                                                                                                                                                         REFERENCE
                                                                                                                                                                                                                                                                                                                                   AUTHORS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       FEATURES
                                                                                                                                                                                                                                                                                                                                                          TITLE
                                                                                                                                                                                                                                                                                                                                                                                            COMMENT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ORIGIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Score:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        BASE
                                                            셤
                                                                                                          g
                                      ò
                                                                                                                                                         셤
                                                                                                                                   ô
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                839 GTGCGTTACTGG----CGCGCNGGGNTTGCTTTTGGCGTGGTCAATACC---GAAAGGANC 786
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     668
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 rValThrThrLeuValGlyGluMetAlaValAlaAlaAspLysArgValAlaValGl 142
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        488
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          gThrProAlaLeuValGlnAlaAlaAlaLysGlyValArgIleSerGlyAspIleAspLe 102
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           uLeuSerSerPheGlnLeuGluThrCysAspArgLeuAsnAlaGluValAlaThrValLe 182
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         uAsnValSerGluAspHisMetAspArgTyrAspGlyMetAlaAspTyrHisLeuAlaLy 202
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      sHisArgIlePheArgGlyAlaArgGlnValValValAsnArgAlaAspAlaLeuThrAr 222
                                                                                                                                                                                                                                                                                                                                                                                                                                                                          62
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        82
Spencer, D.H., Raymond, C.K., Smith, E.E., Sims, E.E., Hastings, M., Burns, J.L., Kaul, R. and Olsen, M.V.
Whole-Genome-Sequence variation among multiple isolates of Psedomonas aeruginosa library
J. Bacteriol., (2002) In press
Contact: Chris K. Raymond
Genome Center
                                                                                                                                                                                                                                                                                                                                                                                                                          23 ValArgTyrLeuAlaArgArgGlyLeuProPheAlaValValAspThrArgGluAsnPro
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  43 ProGlu-LeuAlaThrLeuArgAlaGlnTyrProGlnValGluValArgCysGlyGluLe
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      uAspAlaGluPheLeuCysSerAlaArgGluLeuTyrValSerProGlyLeuSerLeuAr
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 547 CGTGACCACCTGGTGGGGGGAAATGGCGGTGGCCGCGGACAAGCGTGTCGCCGTCGCGG
                                                                                                                                                                                                               /db_xref="taxon:287"
/clone="mabl__6205"
/clone="mabl="mabl"
/note="Environmental isolate. Whole genomic shotgun
                                                                                                                                                                                                                                                                         6 others
                                                                                                                                                                                                                                                                                                                                            ່ ຄີ 5 7
                                                                                                                                                                  1. .892
/organism="Pseudomonas aeruginosa"
                                                                                                                                                                                                                                                                                                                     Length:
Matches:
Conservative:
Mismatches:
Indels:
                                                                                               USA
                                                                                                                                                                                                                                                                          ų
                                                                               University of Washington
Box 352145, Seattle, WA 98105-2145,
Tel: 2062216954
Exar: 206687244
Email: craymond@u.washington.edu
                                                                                                                                                                                                                                                                          160
                                                                                                                                                                                         /mol_type="genomic DNA"
/strain="MSH"
                                                                                                                                                                                                                                                                                                                                                                                Gaps:
                                                                                                                                                                                                                                                                                                                                                                                                    US-09-701-229-2 (1-448) x BZ579116 (1-892)
                                                                                                                                          Class: shotgun.
Location/Qualifiers
                                                                                                                                                                                                                                                                         276 g
                                                                                                                                                                                                                                                                                                                     3.73e-112
1084.00
91.37%
90.20%
47.96%
                                                                                                                                                                                                                                                            library."
                                                                                                                                                                                                                                                                                                                                          Percent Similarity:
Best Local Similarity:
                                                                                                                                                                                                                                                                         173
                                                                                                                                                                                                                                                                                                          Alignment Scores
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              122
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     62
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   82
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               427
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         162
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     202
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      182
                                                                                                                                                                                                                                                                                                                                                      Best Local (
Query Match
                                                                                                                                                                                                                                                                         BASE COUNT
                                                                                                                                                                                                                                                                                                                     Pred. No.:
 AUTHORS
                                              JOURNAL
                       TITLE
                                                          COMMENT
                                                                                                                                                                                                                                                                                    ORIGIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                 g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Q
                                                                                                                                                                                                                                                                                                                                                                                                                           ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ឧ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  õ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            õ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         õ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              g
```

```
BZ568959 1445 bp DNA 11near GSS 17-DEC-2002 pacs2-164 8171.y2 pacs2-164 Pseudomonas aeruginosa genomic clone pacs2-164_8171, genomic survey sequence.
BZ568959 1 GI:27202799
                                                            248
                                                                                                                                             262
                                                                                                                                                                  84 ProAlaLeuValGlnAlaAlaAlaLysGlyValArgIleSerGlyAspIleAspLeuPhe 103
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  845 CCGCGCTGTACAGCCGCGCGAAAGCGTGGCATCTCGTAC-----ATCGATCTT--- 798
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          104 AlaArgGluAlaLysAlaProIleValAlaIleThrGlySerAsnAlaLysSerThrVal 123
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Bacteria; Proteobacteria; Gammaproteobacteria; Pseudomonadales; Pseudomonadaceae; Pseudomonas.

1 (Dasea: 1 to 144).
Spencer,D.H., Raymond,C.K., Smith,E.E., Sims,E.E., Hastings,M., Burns,J.L., Kaul,R. and Olsen,M.V.
Whole-Genome-Sequence variation among multiple isolates of Psedomonas aeruginosa library
sAlaPheGlyLeuIleGluGluAspGlyGlnLysTrpLeuAlaPheGlnPheAspLysLe
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          /organia="Pseudomonas aeruginosa"
/mol_type="genomic DNA"
/strain="2-164"
/db_xref="12164"
/clone="pacs2-164"
/clone="lb="pacs2-164"
/note="clinical isolate 2-164 Whole genomic shotgun incre".
// 424 c 412 g 293 t 8 others
                                                                                                                                                                                                                            uLeuProValGlyGluLeuLyslleArgGlyAlaHisAsnTyr 276
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1445
241
7
25
15
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Length:
Matches:
Conservative:
Mismatches:
Indels:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Genome Center
University of Washington
Box 352145, Seattle, WA 98105-2145, USA
12 206216954
Fax: 2066857244
Email: craymond@u.washington.edu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Gaps:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         SerAlaArgGluLeuTyrVal------
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               J. Bacteriol., (2002) In press
Contact: Chris K. Raymond
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   (1-1445)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Location/Qualifiers
```

g ò පු ò g ò a à g

g ð 셤 ò

```
EST 22-JUN-2000
mRNA sequence.
                                                                                                                                                                                                                                                                                                                                                                         ValargvalalaThrLeuAspGlualaValargGlnalaAlaGluLeuAlaArgGluGly 415
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Eukaryota; Metazoa; Chordata; Cranlata; Vertebrata; Euteleostomi;
                                                                                                                                                                                                                                                                                                                            ArgGlnGlyValSerTyrTyrAspAspSerLysAlaThrAsnValGlyAlaAlaLeuAla
                                                                                                                                                                                                                                                                                                                                                                                                                       GTGCGCGTCACAACGCTGGACGAAGCATTTCCGGAGGCCGGCGAGCTGGCCCGCGAAAGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Asp-AlaValLeuLeuSerProAlaCysAla---SerLeuAspMetPhe-LysAsnPheG
                                                                                                                                                                                                                                                                                                               TyrSerAsnAlaLeuAlaAlaLeuAlaLeuGlyHisAlaValGlyLeuProPheAspAla
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ValLeuLeuGlyArgAspAlaGlyLeuIleAlaGlnAlaLeuGlyAsnAlaValProLeu
                                                                                                                                                                                                                                                                                                                                                              MetLeuGlyAlaLeuLysAlaPheSerGlyLeuAlaHisArgCysGlnTrpValArgGlu
                                                                                                                                         shotgun
                                                                                                                                       Whole genomic
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              BE184674 452 bp mRNA linear AM4 HT0688-050500-002-d10 HT0688 Homo sapiens CDNA, BE184674.1 GI:8663858
                                                                                                                                                              1 others
                                                                     aeruginosa"
                                                                                                                                                                                                                               Conservative:
Mismatches:
Indels:
                                                       1. .1171
/organism="Pseudomonas aeruginos
/organism="Pseudomonas aeruginos
/mol_type="genomic DNA"
/strain="2-164"
/db_xref="taxon:287"
/clone="pacs2-164_1863"
/clone_lib="pacs2-164"
/note="clinical isolate 2-164 Wh
                                                                                                                                                             ų
                                                                                                                                                                                                          Length:
Matches:
                                                                                                                                                             298
          Fax: 2066857244
Email: craymond@u.washington.edu
Class: shotgun.
                                                                                                                                                                                                                                                                    Gaps:
                                                                                                                                                                                                                                                                                          US-09-701-229-2 (1-448) x BZ559806 (1-1171)
                                              Location/Qualifiers
                                                                                                                                                              б
                                                                                                                                                              329
                                                                                                                                                                                                         1.64e-57
603.50
83.13%
79.52%
26.70%
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   541
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         sapiens (human)
                                                                                                                                                   library."
325 c
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        528 TAAAAAAGGCCGG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            434 luGluArgGlyArg
  rel: 2062216954
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      sapiens
                                                                                                                                                                                                                           Percent Similarity:
Best Local Similarity:
Query Match:
DB:
                                                                                                                                                              æ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         HOMO :
                                                                                                                                                                                                Alignment Scores:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               EST
                                                                                                                                                                                                                                                                                                                                                              296
                                                                                                                                                                                                                                                                                                                                                                                    108
                                                                                                                                                                                                                                                                                                                                                                                                           316
                                                                                                                                                                                                                                                                                                                                                                                                                                 168
                                                                                                                                                                                                                                                                                                                                                                                                                                                        336
                                                                                                                                                                                                                                                                                                                                                                                                                                                                               228
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      326
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            288
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    376
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        348
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 396
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   468
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        408
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              416
                                                           source
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          DEFINITION
ACCESSION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 VERSION
KEYWORDS
SOURCE
ORGANISM
                                                                                                                                                             BASE COUNT
ORIGIN
                                                                                                                                                                                                            ..
Q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         RESULT 4
BE184674
                                              FEATURES
                                                                                                                                                                                                                      Score:
                                                                                                                                                                                                                                                                                                                 δ
                                                                                                                                                                                                                                                                                                                                      g
                                                                                                                                                                                                                                                                                                                                                              δ
                                                                                                                                                                                                                                                                                                                                                                                    셤
                                                                                                                                                                                                                                                                                                                                                                                                           δ
                                                                                                                                                                                                                                                                                                                                                                                                                               g
                                                                                                                                                                                                                                                                                                                                                                                                                                                        ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                             셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ď
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       GSS 17-DEC-2002
                                                                              163
                                                                                                                           183
                                                                                                                                                                        203
                                                                                                                                                                                                                                                                   243
                                                                                                                                                                                                                                                                                         385
                                                                                                                                                                                                                                                                                                                                      325
                                                                                                                                                                                                                                                                                                                                                              283
                                                                                                                                                                                                                                                                                                                                                                                     265
                                                                                                                                                                                                                                                                                                                                                                                                                                                        323
                                                                                                                                                                                                                                                                                                                                                                                                                                                                               145
                                 143
                                                                                                                                                  565
                                                                                                                                                                                                                     223
                                                                                                                                                                                                                                            445
                                                                                                                                                                                                                                                                                                                263
                                                                                                                                                                                                                                                                                                                                                                                                                                 202
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   684
                                                                                                                                                                                                                                                                                                                                                                                                          AlaLeuGlyHisAlaValGlyLeuProPheAspAlaMetLeuGlyAlaLeuLysAlaPhe 303
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    pacs2-164_1863.x1 pacs2-164 Pseudomonas aeruginosa genomic clone
pacs2-164_1863, genomic survey sequence.
BZ559806
                                                                                                                         Bacteria; Proteobacteria; Gammaproteobacteria; Pseudomonadales; Pseudomonadaceae; Pseudomonas.

(bases 1 to 1171)
Spencer, D.H., Raymond, C.K., Smith, E.E., Sims, E.E., Hastings, M., Burns, J.L., Kaul, R. and Olsen, M. V.
Whole-Genome-Sequence variation among multiple isolates of Psedomonas aeruginosa library
ThrThrLeuValGlyGluMetAlaValAlaAlaAspLysArgValAlaValGlyGlyAsn
                                              LeuGlyThrProAlaLeuAspLeuLeuAlaAspAspIleGluLeuTyrValLeuGluLeu
                                                                                         ArgilePheArgGlyAlaArgGlnValValValAsnArgAlaAspAlaLeuThrArgPro
                                                                                                                                                                                                                                LeuIleAlaAspThrValProCysTrpSerPheGlyLeuAsnLysProAspPheLysAla
                                                                                                                                                                                                                                                                              PheGlyLeuIleGluGluAspGlyGlnLysTrpLeuAlaPheGlnPheAspLysLeuLeu
                                                                                                                                                                                                                                                                                                                          ProvalGlyGluLeuLysIleArgGlyAlaHisAsnTyrSerAsnAlaLeuAlaAlaLeu
                                                                                                                                                                                                                                                                                                                                                                        Genome Center
University of Washington
Box 352145, Seattle, WA 98105-2145, USA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               J. Bacteriol., (2002) In press
Contact: Chris K. Raymond
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   BZ559806.1 GI:27176698
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Pseudomonas aeruginosa
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Pseudomonas aeruginosa
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | IleaspGly 346
||||||||||
| ATCGACGGG 76
                                                                            144
                                                                                                   683
                                                                                                                                                624
                                                                                                                                                                                             564
                                                                                                                                                                                                                                                                 224
                                                                                                                                                                                                                                                                                                                                                                                                          284
                                                                                                                                                                                                                                                                                                                                                                                                                               264
                                                                                                                                                                                                                                                                                                                                                                                                                                                                            204
          797
                                124
                                                                                                                           164
                                                                                                                                                                       184
                                                                                                                                                                                                                    204
                                                                                                                                                                                                                                          504
                                                                                                                                                                                                                                                                                        444
                                                                                                                                                                                                                                                                                                               244
                                                                                                                                                                                                                                                                                                                                    384
                                                                                                                                                                                                                                                                                                                                                            264
                                                                                                                                                                                                                                                                                                                                                                                   324
                                                                                                                                                                                                                                                                                                                                                                                                                                                      304
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      84
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    LOCUS
DEFINITION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         SOURCE
ORGANISM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               JOURNAL
COMMENT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ACCESSION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  VERSION
KEYWORDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         REFERENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  AUTHORS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          BZ559806
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         TITLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               RESULT
```

g οχ g ò

ò

g δ ద

g ð g

ò

295 107 315 335 227 355 287 375 347 395 407

```
928 bp DNA linear GSS 17-DEC-2002 pacs2-164_7094.y2 pacs2-164 Pseudomonas aeruginosa genomic clone Bz567557
                                                                                                                                        262 GCACTCGGTCACGCGGTTGGGCTGCCATTCGACGCCATGCTCGCGAGCCTGCGCACGTAT 321
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               rpSerPheGlyLeuAsnLysProAspPheLysAlaPheGlyLeuIleGluGluAspGlyG 252
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         581 GATGGGTTG---AATATCTTTTGCCGCAAACATCGGTTCTTAATACGTTGGCCGTCAGGT 525
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Pseudomonas aeruginosa
Bacteria; Proteobacteria; Gammaproteobacteria; Pseudomonadales;
Pseudomonadaceae; Pseudomonas.
1 (bases 1 to 928)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  SerGlyLeuAlaHisArgCysGlnTrpValArgGluArgGlnGlyValSerTyr-TyrAs :::::|||||||
                                                                       193 AspGlyMetalaAspTyrHisLeualaLysHisArgIlePhe-ArgGlyAlaArgGlnVa
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      /db_xref="taxon:287"
/clone="pacs2-164_7094"
/clone_lib="pacs2-164"
/note="clinical isolate 2-164 Whole genomic shotgun
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  928
89
24
10
3
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          aeruginosa"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Matches:
Conservative:
Mismatches:
Indels:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            226
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Length:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            /organism="Pseudomonas //mol_type="genomic DNA" /strain="2-164"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Gaps:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                US-09-701-229-2 (1-448) x BZ567557 (1-928)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       236 g
                                                                                                                                                                                                                                                                                                                                                                                                                                                               BZ567557.1 GI:27199005
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Pseudomonas aeruginosa
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             9.72e-25
313.00
60.11%
47.34%
13.85%
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            228 c
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      library.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Class: shotgun.
                                                                                                                                                                                                                                   343 spile 344
                                                                                                                                                                                                                                                                                 442 ATATC 446
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Percent Similarity:
Best Local Similarity:
Query Match:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         238
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Scores:
                                                  304
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 232
                                                                                                                                                                                                                                                                                                                                                                                                                                          ACCESSION
VERSION
KEYWORDS
SOURCE
ORGANISM
                                                                                                                                                                                                                                                                                                                              RESULT 5
BZ567557/c
                                                                                                                                                                                                                                                                                                                                                                                            DEFINITION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            COUNT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Pred. No.:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Alignment
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      REFERENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         AUTHORS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 JOURNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             FEATURES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         TITLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            COMMENT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ORIGIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            BASE
                                                                                             g
                                                                                                                                                                                      g
                                                                                                                                                                                                                                                                                 合
                                                  õ
                                                                                                                                             å
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         윱
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ζò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          1. .452
//organism="Homo saplens"
//mol_type="misson:9606"
//dev_stage="Homo saplens"
//db_xref="taxon:9606"
//dev_stage="House"
//dev_stage="House"
//dev_stage="House"
//dev_stage="Adult"
//clone_lib="Houses"
//orde="Organ: head_neck; Vector: pucl8; Site_1: Smal;
//orde="Organ: head_neck; Vector: head_neck; Vector: pucl8; Site_1: Smal;
//orde="Organ: head_neck; Vector: head_neck; Ve
1 (bases 1 to 452).
Dias Neto.E., García Correa,R., Verjovski-Almeida,S., Briones,M.R., Nagai,M.A., da Silva,W. Jr., Zago,M.A., Bordin,S., Costa,F.F., Goldman,G.H., Carvalho,A.F., Matsukuma,A., Baia,G.S., Simpson,D.H., M.J., Soares,F., Brentani,R.R., Reis,L.F., de Souza,S.J. and
                                                                                                                                                                                                                                                                                                                                                                                                                                                   Email: asimpson@ludwig.org.br
This sequence was derived from the FAPESP/LICR Human Cancer Genome Project. This entry can be seen in the following URL (http://www.ludwig.org.br/scripts/gethtml2.pl?tl=&t2=PW4-HT0688-050 500-002-dl0&t3=2000-05-05&t4=1)
Seq primer: puc 18 forward
High quality sequence start: 26
High quality sequence stop: 89.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     204 ArgilePheArgGlyAlaArgGlnValValAsnArgAlaAspAlaLeuThrArgPro 223
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   243
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   PheGlyLeuIleGluGluAspGlyGlnLysTrpLeuAlaPheGlnPheAspLysLeuLeu 263
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              283
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            AlaLeuGlyHisAlaValGlyLeuProPheAspAlaMetLeuGlyAlaLeuLysAlaPhe 303
                                                                                                                                                                                                                                                                                               Contact: Simpson A.J.G.
Laboratory of Cancer Genetics
Ludwig Institute for Cancer Research
Rua Prof. Antonio Prudente 109, 4 andar, 01509-010, Sao Paulo-SP,
                                                                                                                                                                                      Shotgun sequencing of the human transcriptome with ORF expressed
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              30 cGAATCTCCCGGGGTTAGGCATTTGTCGTCACCGCCAGA-----TGCCTGCGCCGTCG-
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         224 LeulleAlaAspThrValProCysTrpSerPheGlyLeuAsnLysProAspPheLysAla
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             264 ProvalGlyGluLeuLysIleArgGlyAlaHisAsnTyrSerAsnAlaLeuAlaAlaLeu
                                                                                                                                                                                                         sequence tags
Proc. Natl. Acad. Sci. U.S.A. 97 (7), 3491-3496 (2000)
20202663
10737800.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Length:
Matches:
Conservative:
Mismatches:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Indels:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        US-09-701-229-2 (1-448) x BE184674 (1-452)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            4.7e-34
391.00
75.528
63.648
17.308
                                                                                                                                                                                                                                                                                                                                                                                                                rel: +55-11-2704922
                                                                                                                                                                                                                                                                                                                                                                                                                                     Fax: +55-11-2707001
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Percent Similarity:
Best Local Similarity:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   91
                                                                                                                                                                                                                                                                                                                                                                                               Brazil
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Alignment Scores:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      244
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            284
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Pred. No.:
                     REFERENCE
AUTHORS
                                                                                                                                                                                                                            JOURNAL
MEDLINE
PUBMED
COMMENT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 BASE COUNT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            FEATURES
                                                                                                                                                                                   TITLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ORIGIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Score:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                đ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ô
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 å
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        à
```

S

```
Alignment Scores:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     445
                                                                                                                                                                                                                                                                                                                                                                                                            188
                                                                                                                                                                                                                                                                                                                                                                                                                                            949
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           586
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         224
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       526
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         238
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     487
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     250
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  290
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  325
                                                                                                                                                                                                                                                            Query Match:
DB:
     source
                                                                                                                               BASE COUNT
ORIGIN
                                                                                                                                                                                                 ..
9
                                                                                                                                                                                                                  Score
                                                                                                                                                                                               Pred
                                                                                                                                                                                                                                                                                                                                                                           g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              qq
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            엄
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         qq
                                                                                                                                                                                                                                                                                                                                              ò
                                                                                                                                                                                                                                                                                                                                                                                                            ò
                                                                                                                                                                                                                                                                                                                                                                                                                                           g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ŏ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    qq
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ŏ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                qq
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              οy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             qq
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              δy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ·δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Db
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                AG-ND-127J23.TR ND-TAM Anopheles gambiae genomic clone AG-ND-127J23 . genomic survey sequence.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Email: blottusetigr.org
This clone is from an A. gambiae BAC library (ND-TAM) provided by
This clone is from an A. gambiae BAC library (ND-TAM) provided by
F.H. Collins and sequenced by The Institute for Genomic Research
(TIGR). The BAC library was generated from A. gambiae PEST strain
DNA. All DNA was extracted from newly hatched first instar larvae
to minimize the inclusion of DNA from microorganisms that inhabit
the gut. The DNA is derived from mixed sexes of larvae. The BAC
library was constructed at Texas A&M Universty BAC Center
University, College Station, Texas 77843-2123, USA using a HindIII
Seq primer: MI3 Rev
Class: BAC ends.
                                                                                                                               285
                                                                                                                                                                                351 uAlaGlyGlyAspGlyLysGlyAlaAspPheHisAspLeuArgGluProValAlaArg-- 370
 GGTCGTTCGACCTCAGCAAGGCGGTTTACAAAGCTTTCGACCTGGTCCAAGAAGTCGTAC 405
                                                                                                                                                              292 roPhe-AspAlaMetLeuGlyAlaLeuLysAlaPheSerGlyLeuAlaHisArgCysGln 311
                                                                                                                                                                                                                            312 TrpValArgGluArgGlnGlyValSerTyrTyr-AspAspSerLysAlaThrAsnValGl 331
                                                                                                                                                                                                                                                                                          331 yAlaAlaLeuAlaAlaIleGluGlyLeuGlyAlaAspIleAspGlyLysLeuValLeuLe 351
                                                                                                                                                                                                                                                                                                              Anopheies.

1 (bases 1 to 714)

Hong, Y. S., Hogan, J. R., Wang, X., Sarkar, A., Sim, C., Loftus, B.J., Re, C., Huff, E. R., Carlile, J. L., Black, K., Zhang, H.-B., Gardner, M.J. and Collins, F. H.

Construction of a BAC library and generation of BAC end sequence-tagged connectors for genome sequencing of the African malaria mosquito Anopheles gambiae

Mol. Genet. Genomics 268 (6), 720-728 (2003)
                                                                                                                                                                                                                                                                                                                                                                                        104 CGCAGACGCAGACGACAAGGGG---GATCCACTAGTTCTAGAGCGGCCGCCACCGCGGTG 48
                                                                                                                252 lnLysTrpLeuAlaPheGlnPheAspLysLeuLeuProValGlyGluLeuLysIleArgG
                                                                                              272 lyAlaHisAsnTyrSerAsnAlaLeuAlaAlaLeuAlaLeuGlyHisAlaValGlyLeuP
                                                                                                                                                                                                                                              Eukaryota, Metazoa; Arthropoda; Hexapoda; Insecta; Pterygota;
Neoptera; Endopterygota; Diptera; Nematocera; Culicoidea;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Department of Eukaryotic Genomics
The Institute for Genomic Research
9712 Medical Center Dr., Rockville, MD 20850, USA
Tel: 301 838 0208
Fax: 301 838 3543
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Anopheles gambiae (African malaria mosquito)
Anopheles gambiae
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Other_GSSs: AG-ND-127J23.TF
Contact: Brendan J Loftus
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      BH374901.1 GI:17321043
                                                                                                                                                                                                                                                                                                                                                                                                                          371 ------ 372
                                                                                                                                                                                                                                                                                                                                                                                                                                                      GAGCTCCAGCTTTTGT 32
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 655398
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       BH374901
 464
                                                                                                                                                                                                                                                                                                                                                                                                                                                        47
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      LOCUS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ACCESSION
VERSION
KEYWORDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         BH374901/c
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ORGANISM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              MEDLINE
PUBMED
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 AUTHORS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  REFERENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 JOURNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                TITLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                COMMENT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          RESULT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     SOURCE
셤
                               à
                                                              셤
                                                                                            ò
                                                                                                                         g
                                                                                                                                                            ò
                                                                                                                                                                                        g
                                                                                                                                                                                                                        οy
                                                                                                                                                                                                                                                       g
                                                                                                                                                                                                                                                                                          ò
                                                                                                                                                                                                                                                                                                                   a
                                                                                                                                                                                                                                                                                                                                                     ò
                                                                                                                                                                                                                                                                                                                                                                                       g
                                                                                                                                                                                                                                                                                                                                                                                                                          ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                     a
```

Location/Qualifiers

FEATURES

```
187
                                                                                                                                                                                                                                                                                                                                                                                                                                   647
                                                                                                                                                                                                                                                                                                                                                                                                                                                                       206
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                587
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         527
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               237
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      249
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               446
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     269
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          386
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                289
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     385 CTTGTAGGAAACCATAATGTTGCCAATAGTTTAGCTGCAAGTATAGCAGGTAAACTGCTA 326
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           GlyLeuProPheAspAlaMetLeuGlyAlaLeuLysAlaPheSerGlyLeuAlaHisArg 309
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  266
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        310 CysGlnTrpValArgGluArgGlnGlyValSerTyrTyrAspAspSerLysAlaThrAsn 329
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             330 ValGlyAlaAlaLeuAlaAlaIleGluGlyLeuGlyAlaAspIleAspGlyLysLeuVal 349
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                350 LeuLeuAlaGlyGlyAspGlyLysGlyAlaAspPheHisAspLeuArgGluProValAla 369
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ArgPheCysArgAlaValLeuLeuGlyArgAspAlaGlyLeuIleAlaGlnAlaLeu 389
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    207 ArgGlyAlaArgGln-----ValValValAsnArgAlaAspAlaLeuThrArgPro 223
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                97 AAGAAAGTTCGTGCCATCGTATGTCTGGGATTGGATAATGAAAAGATCATTCAGTTCTTC 38
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |||| ::: ::: ::: ::||| GACAATGAATTAGTCATTAAACTTCAGGACGACCTTCAGAATGAAAATTTCTGATCTTTCA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         171 CysAspArgLeu-----AsnAlaGluValAlaThrValLeuAsnValSerGluAsp
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                LeuIle-------AlaAspThrValProCysTrpSerPheGlyLeuAsn
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               --------TTCTCTATGAAAGAAGCTAAGGTGAAGGTGTTATTCAATT
                                                                                                                                                                                                                                                                                                                                                                                                                                   706 TGTGATAATATTCAGTATTTCAGACCATATATCAGTTTGCTTCTAAATCTGTCTCAGGAC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                           HisMetAspArgTyrAsp---GlyMetAlaAspTyrHisLeuAlaLysHisArgIlePhe
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               AspGlyGlnLysTrpLeuAlaPheGlnPheAspLysLeuLeuProValGlyGluLeuLys
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    270 IleArgGlyAlaHisAsnTyrSerAsnAlaLeuAlaAlaLeuAlaLeuGlyHisAlaVal
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            LysProAspPheLysAlaPheGlyLeuIleGluGlu-------------
                                                    /db_xref="taxon:7165"
/clone="AG-ND-127723"
/clone=lib="ND-TAM"
/note="Vector: pECBAC1; Site_1: HindIII"
140 c 106 g 256 t
                                                                                                                                                                                                                  714
67
48
94
38
                                                                                                                                                                                                                                                       Conservative:
Mismatches:
/organism="Anopheles gambiae"
/mol_type="genomic DNA"
/strain="PEST"
                                                                                                                                                                                                                  Length:
Matches:
                                                                                                                                                                                                                                                                                               Indels:
                                                                                                                                                                                                                                                                                                                                                        US-09-701-229-2 (1-448) x BH374901 (1-714)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        GlyAsnAlaValProLeuVal 396
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                1.23e-16
240.00
46.56%
27.13%
10.62%
                                                                                                                                                                                                                                                                               Best Local Similarity:
                                                                                                                                         æ
                                                                                                                                       212
                                                                                                                                                                                                                                                         Percent Similarity:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         g
```

```
Contact: Brendan J Loftus
The Institute for Genomic Research
710: 301 838 0208
Fax: 301 838 3543
Fax: 301 838 3543
Fax: 301 838 5343
Fax: 301 83
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               AG-ND-127N18.TR ND-TAM Anopheles gambiae genomic clone AG-ND-127N18 . genomic survey sequence.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Hong Y.S., Hogan, J.R., Wang, X., Sarkar, A., Sim, C., Loftus, B.J., Ren
, C., Huff, E.R., Carlile, J.L., Black, K., Zhang, H.-B., Gardner, M.J.
and Collins, F.H.
                                                                                                                                                                                                                                                  374 AlaValValLeuLeuGlyArgAspAlaGlyLeuIleAlaGlnAlaLeu------Gly 390
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          LeualaargGluGlyaspalaValLeuLeuSerProalaCysalaSerLeuAspMetPhe 430
                                                                                                                                373
                                                                                                                                                                      391 AsnAlaValProLeuValArgValAlaThrLeuAspGluAlaValArgGlnAlaAlaGlu 410
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       340 LeuGlyAlaAspIleAspGlyLysLeuValLeuLeuAlaGlyGlyAspGlyLys---- 357
                                                                     555 ATT-----GIGGGAAAGAAGCAGIGGIGTIGTIAGGGGGCCAAGCAAAGGTIGGA 505
                                                                                                                                                                                                                                                                                                             447 GCTGTTGTACTTTTGGAGCATCGGGCCTTGCGATTGAACAGGAGTTGCGTCACGCAGGT 388
                                                                                                                                                                                                                                                                                                                                                                                                                               387 TTGAGTATCACATGCACATATACAGAACTTTTTGCAGATGCAGTGCAACTTGCTGGCTCT 328
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Construction of a BAC library and generation of BAC end sequence-tagged connectors for genome sequencing of the African malaria mosquito Anopheles gambiae Mol. Genet. Genomics 268 (6), 720-728 (2003)
                                                                                                                                -----GlyAlaAspPheHisAspLeuArgGluProValAlaArgPheCysArg
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Anopheles gambiae (African malaria mosquito)
Anopheles gambiae
Eukaryota; Metazoa; Arthropoda; Hexapoda; Insecta; Pterygota;
Neoptera; Endopterygota; Diptera; Nematocera; Culicoidea;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 267 AAAAATTTTGAGCATCGTGGCCAAGTTTTTGCC 235
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               431 LysAsnPheGluGluArgGlyArgLeuPheAla 441
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            /organism="Anopheles garden".
/mol_type="genomic DNA'/strain="PEST"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          /db_xref="taxon:7165"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          /clone-"AG-ND-127N18"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                BH367641.1 GI:17313685
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            (bases 1 to 760)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           partial digest.
Seq primer: M13 Rev
Class: BAC ends.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   1. .760
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Anopheles.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      GSS
                                                                                                                                358
                                                                                                                                                                                         504
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          411
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         source
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      BH367641/c
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           DEFINITION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           MEDLINE
PUBMED
COMMENT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ORGANISM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ACCESSION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   VERSION
KEYWORDS
SOURCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   REFERENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  AUTHORS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            JOURNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      RESULT 8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          FEATURES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       TITLE
                                                           셤
                                                                                                                                ò
                                                                                                                                                                            g
                                                                                                                                                                                                                                                  à
                                                                                                                                                                                                                                                                                                          đ
                                                                                                                                                                                                                                                                                                                                                                         à
                                                                                                                                                                                                                                                                                                                                                                                                                        Dp
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ద
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            A backbone of the vector is basically from pBluescript(KS), that was in vivo excised from a modified lPs phage vector (Mo bl rec, was in vivo excised from a modified lPs phage vector (Mo bl rec, Germany). 5' end of the cDNA that was digested with XhoI was ligated to Sall site of the vector and the 3' end including polya tail was ligated to BamHI site of the vector. CDNA instert could be amplified with conventional T7 and T3 primers. This full-length described in The Plant J 15, 707-720 (1998) Seki M. et al.

Protonemata were blended by the POLYTRON, and then cultivated on the BCDATG medium for 13-14 days under the continuous light.
                                                                  EST 24-JAN-2002
                                                                                                                                                                                                                                                                    Physcomitrella patens subsp. patens
Physcomitrella patens subsp. patens
Physcomitrella patens subsp. patens
Eukaryota, Viridiplantae; Streptophyta; Embryophyta; Viridiplantae; Funariales; Funariaceae; Physcomitrella.

1 (bases 1 to 748)
Fujita,T., Shin-1,T., Seki,M., Kamiya,A., Uchiyama,I., Nishiyama,T., Carninci,P., Hayashizaki,Y., Shinozaki,K., Kohara,Y. and Hasebe
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Comparison of the moss Physcomitrella patens genome with flowering
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          319
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         281 AlaAlaLeuAlaLeuGlyHisAlaValGlyLeuProPheAspAlaMetLeuGlyAlaLeu 300
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     735 GCTCTTCTTGCCCTATCTTTAGATGTTGGACTGCAGATCAGAAGATATTCAAGCGGCTATT 676
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          675 CCCCACTTAAAGGCTCCTCCACATGGAAATTGTGCATCAAGACGACGACGAGGGGG 616
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  320 SerTyrTyrAspAspSerLysAlaThrAsnValGlyAlaAlaLeuAlaAlaIleGluGly 339
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        /mol_type="mRNA"
/sub_species="patens"
/db_xref="taxon:145481"
/clone="pph31918"
/tissue_type="mixture of chloronemata and young
gametophores with 2 to 5 leaves"
/clone_lib="full length cDNA library, chloronemata and
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 301 LysalaPheSerGlyLeuAlaHisArgCysGlnTrpVal---ArgGluArgGlnGlyVal
                                                        BJ172647

BJ172647 full length cDNA library, chloronemata and young agametophores Physcomitrella patens subsp. patens cDNA clone pph33b18 3', mRNA sequence.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     1. 748
/organism="Physcomitrella patens subsp. patens"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        748
68
20
69
14
5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Contact: Tadasu Shin-1
Center For Genetic Resource Information
National Institute of Genetics
1111 Yata, Mishima, Shizuoka 411-8540, Japan
Tel: 81-559-81-6855
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Conservative:
Mismatches:
Indels:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                198 t
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Length:
Matches:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 US-09-701-229-2 (1-448) x BJ172647 (1-748)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ng gametophores"
192 c 144 g
                                                                                                                                                                                                               BJ172647.1 GI:18340619
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              8.19e-16
233.00
51.46%
39.77%
10.31%
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 young
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                plants genome
Unpublished
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Best Local Similarity:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             214
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Percent Similarity:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Alignment Scores:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Query Match:
RESULT 7
BJ172647/C
                                                                                                                                                                            ACCESSION
VERSION
KEYWORDS
SOURCE
ORGANISM
                                                                                    DEFINITION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             BASE COUNT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Pred. No.:
                                                                                                                                                                                                                                                                                                                                                                                         REFERENCE
AUTHORS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      JOURNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         FEATURES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             TITLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     COMMENT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ORIGIN
```

ö 요 à g ð

```
764 TAAACCTTTCCAGCCGATCAAGAGATATATAACCTACTTTTCCGCCAAGGATGTGTTC 705
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         yAsnAlaValProLeuValArgValAlaThrLeuAspGluAlaValArgGlnAlaAlaGl 410
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 410 uLeuAlaArgGluGlyAspAlaValLeuLeuSerProAlaCysAlaSerLeuAspMetPh 430
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 CCGGACGGGAACAAAAAAGCAAAAACGAGGGTAGTGCATGTGTCAACAAACGGTGGTCA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Pseudomonadales;
                                                                                                                                                       Sims, E.E., Hastings, M.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ------AlaAlaIleGluGlyLeuGlyAlaAspIleAspGlyLysLeuValLeu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Leu-AlaGlyGlyAspGlyLysGlyAlaAspPheHisAspLeuArgGluProValAlaAr
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 gPheCysArgAlaValValLeuLeuGlyArgAspAlaGlyLeuIleAlaGlnAlaLeuGl
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             eLysAsnPheGluGluArgGlyArgLeuPheAlaLysAlaValGluGluLeuAla 448
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  /mol_type="genomic DNA"
/strain="1-60"
/db_xxef="taxon:287"
/clone="pacs1-60_2584"
/clone=lib="pacs1-60"
/note="clinical isolate 1-60 Whole genomic shotgun
                                                                                                                                                                                                of.
                                                                               Postucioning using a procession of the processio
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   GlnTrpValArgGluArgGlnGlyValSerTyrTyrAspAspSer
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1194
77
10
51
23
                                                                                                                                                                                                                                                                                                                                                                                                                                                                     aeruginosa"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Conservative:
Mismatches:
Indels:
                                                                                                                                                                                                                                                                                                                      USA
                                                                                                                                                                                                                                    J. Bacteriol., (2002) In press
Contact: Chris K. Raymond
Genome Center
University of Washington
Box 352145, Seattle, WA 98105-2145,
Tel: 2062216954
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Length:
Matches:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  314
                                                                                                                                                                                                                                                                                                                                                             Fax: 2066857244
Email: craymond@u.washington.edu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                /organism="Pseudomonas
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               US-09-701-229-2 (1-448) x BZ550283 (1-1194)
                                                                                                                                                                                                                                                                                                                                                                                                                       Location/Qualifiers
1. .1194
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  298 g
          GI:27153864
                                                 Pseudomonas aeruginosa
Pseudomonas aeruginosa
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1.04e-14
226.00
54.728
48.438
10.008
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               library."
349 c
                                                                                                                                                                                                                                                                                                                                                                                                    Class: shotgun.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Percent Similarity:
Best Local Similarity:
Query Match:
          BZ550283.1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ď
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  233
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Alignment Scores:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              704
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         390
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     311
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       326
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            824
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       335
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         370
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             430
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       351
                                                                       ORGANISM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  COUNT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Мо.:
                                                                                                                                                                                                                                    JOURNAL
COMMENT
        VERSION
KEYWORDS
                                                                                                                                   REFERENCE
                                                                                                                                                       AUTHORS
                                                                                                                                                                                                                                                                                                                                                                                                                            FEATURES
                                                                                                                                                                                             TITLE
                                                 SOURCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ORIGIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  BASE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Pred.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            d
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        qq
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          qq
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       οy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              엽
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         δy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         δλ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ογ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                B2550283 1194 bp DNA linear GSS 17-DEC-2002 pacs1-60_2584.xl pacs1-60 Pseudomonas aeruginosa genomic clone pacs1-60_2584, genomic survey sequence.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      222
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             500
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       347
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              213
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         387
                                                                                                                                                                                                                                                                                                                  167 GlnLeuGluThrCysAspArgLeuAsnAlaGluValAlaThrValLeuAsnValSerGlu 186
                                                                                                                                                                                                                                                                                                                                            202
                                                                                                                                                                                                                                                                                                                                                                                                                                             640
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      236
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      254
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               441
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              321
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ::: ::: ||||||| |||||| ||||:: :::::: :::
212 GCAATATGGATTGTTGGTGGAATAGATAAGGAAATGACTATACAGAAATTGAGGATCTG 153
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ------LeuAlaPheGlnPheAspLysLeuLeuProValGlyGlu 267
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   LeuLysIleArgGlyAlaHisAsnTyrSerAsnAlaLeuAlaAlaLeuAlaLeuGlyHis .287
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            381
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   288 AlaValGlyLeuProPheAspAlaMetLeuGlyAlaLeuLysAlaPheSerGlyLeuAla 307
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   HisArgCysGlnTrpValArgGluArgGlnGlyValSerTyrTyrAspAspSerLysAla 327
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     348 LeuValLeuLeuAlaGlyGlyAspGlyLysGlyAlaAspPheHisAspLeuArgGluPro 367
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         388 AlaLeuGlyAsnAlaValProLeuVal---ArgValAlaThrLeuAspGluAlaVal 405
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           328 ThrAsnValGlyAlaAlaLeuAlaAlaIleGluGlyLeuGlyAlaAspIleAspGlyLys
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           AspHisMetAspArgTyrAsp---GlyMetAlaAspTyrHisLeuAlaLysHisArgIle
                                                                                                                                                                                                                                                                                                                                                                                                                              206 PheArgGlyAlaArgGln-----ValValValAsnArgAlaAspAlaLeuThrArg
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                539 GCAGAAAATCAGGAAAATGATAATTTCATCTACAATAAAGATGATGAAATGAGCCAG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ProLeulle....-----AlaAspThrValProCysTrpSerPheGlyLeu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        579 AAAATTCTTCAGTCTCTGGAGATTAATGCTACAATGATTCCT--------
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 AsnLysProAspPheLysAlaPheGlyLeuIleGluGluAspGlyGlnLysTrp----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             380 CIGCTAAATATTAGTAATGAAAGTATCCGCAATAGTCTGATGACATTCAGGCTGTTCCG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       368 ValAlaArgPheCysArgAlaValValLeuLeuGlyArgAspAlaGlyLeuIleAlaGln
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                TTCTTCAGAAACAAAAAGGATTTTGAAACCTCTAGCATGGAAGAATGTGTA 36
/clone_lib="ND-TAM"
/note="Vector: pECBAC1; Site_1: HindIII"
155 c 112 g 271 t
                                                                                                                                 760
70
52
100
39
                                                                                                                             Length:
Matches:
Conservative:
Mismatches:
Indels:
Gaps:
                                                                                                                                                                                                                                                                             US-09-701-229-2 (1-448) x BH367641 (1-760)
                                                                                                                               1.41e-15
231.00
47.10%
27.03%
10.22%
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   255 -----
                                                                                                                                                                      Percent Similarity:
Best Local Similarity:
                                                 ø
                                               222
                                                                                                           Alignment Scores:
Pred. No.:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   268
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                92
                                                                                                                                                                                                                                                                                                                                                                                                    187
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  223
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    237
                                                                                                                                                                                                               Query Match:
DB:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          BZ550283/c
LOCUS
                                             BASE COUNT
ORIGIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     DEFINITION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ACCESSION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           RESULT 9
                                                                                                                                                       Score:
                                                                                                                                                                                                                                                                                                                                                         a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                셤
                                                                                                                                                                                                                                                                                                                  ò
                                                                                                                                                                                                                                                                                                                                                                                                                                    g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          엄
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       à
                                                                                                                                                                                                                                                                                                                                                                                                    ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 õ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       à
```

œ

232

```
Direct Submission

Direct Submission

Direct Submission

Direct Submission

Submitted (00-58P-2000) Genoscope - Centre National de Sequencage,

z rue Gaston Cremieux, CP 5706, 91057 EVRY cedex, FRANCE. (E-mail:
seqref@genoscope.cns.fr - Web : www.genoscope.cns.fr)

This GSS is part of a random genomic sequencing program of thirteen yeast species: Saccharomyces bayanus var. uvarum, Saccharomyces
exiguus, Saccharomyces servazzii, Zygosaccharomyces rouxii,
Saccharomyces kluyverimyces thermotolerans, Kluyveromyces
lactis var. lactis, Kluyveromyces marxianus, var. marxianus, Pichia angusta, Debaryomyces hansenli var. hansenli, Pichia sorbitophila,
Candida tropicalis and Yarrowia lipolytica. Genomic inserts of 3 to
5 kb were prepared and both extremities were sequenced. See
keywords for description of this sequence and for the sequence of
the other extremity of this insert.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  CNSO70MR 965 bp DNA linear GSS 06-JUL-2001 T3 end of clone AZ0AA010F07 of library AZ0AA from strain CBS 712 of Kluyveromyces marxianus, genomic survey sequence.
                                                                                                                                                                                                                                                                                        aLysAla-----ProIleValAlaIleThrGlySerAsnAlaLysSerThrValTh 124
                                                                                                                         rThrLeuValGlyGluMetAlaValAlaAlaAspLysArgValAlaValGlyGlyAsnLe 144
  88 nAlaAlaAlaLys---GlyValArgIleSerGlyAspIleAspLeuPheAlaArgGluAl 107
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          2 (bases 1 to 965)
Llorente, B., Malpertuy, A., Blandin, G., Artiguenave, F., Wincker, P.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Kluyveromýces marxianus
Eukaryota; Fungi; Ascomycota; Saccharomycotina; Saccharomycetes;
Saccharomycetales; Saccharomycetaceae; Kluyveromyces.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Souciet, J.L., Aigle, M., Artiguenave, F., Blandin, G.,
Souciet, J.L., Aigle, M., Bon, E., Brottler, P., Casaregola, S.,
de-Montigny, J., Dujon, B., Durnes, P., Lepingle, A., Llorente, B.,
Malpertuy, A., Neuveglise, C., Ozler Kalogeropoulos, O., Potler, S.,
Saurin, W., Tekala, F., Toffano-Nioche, C., Wesolowski-Louvel, M.,
Genomic exploration of the hemiascomycetous yeasts: 1. A set of
Perss lett. 487 (1), 3-12 (2000)
                                                 ACTTGCAAGAAGTTTTGACTGTAAAATAAAATCGGATATTGAACTATTTCTA---GAAGC
                                                                                                                                                                                                                                           291 GTCATTAATAGGTCACATATTAAAATCTGCGGGAAAAAAGTAGCTATTGGTGGAAATTT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         and Dujon, B. Genomic exploration of the hemiascomycetous yeasts: 12
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              /organism="Kluyveromyces marxianus"
/mol_type="genomic DNA"
/strain="CBS 712"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Kluyveromyces marxianus var. marxianus
FEBS Lett. 487 (1), 71-75 (2000)
20584722
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 AL423817.1 GI:12207011
GSS.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Kluyveromyces marxianus
                                                                                                                                                                                                                                                                                                                                                                                                               174 CTCTTTCAATTAGAA 159
                                                                                                                                                                                                                                                                                                                                                                                      rSerPheGlnLeuGlu 169
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             (bases 1 to 965)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    (bases 1 to 965)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               1. .965
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      11152876
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              11152887
                                                 408
                                                                                                107
                                                                                                                                                                                               124
                                                                                                                                                                                                                                                                                                                                                                                      164
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 source
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              CNS070MR/c
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        DEFINITION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ORGANISM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            REFERENCE
AUTHORS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        AUTHORS
TITLE
JOURNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          MEDLINE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            JOURNAL
MEDLINE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ACCESSION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                VERSION
KEYWORDS
SOURCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           REFERENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 AUTHORS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     RESULT 11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              PUBMED
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    REFERENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         JOURNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      FEATURES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  TITLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             COMMENT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            TITLE
                                               g
                                                                                                ò
                                                                                                                                             염
                                                                                                                                                                                               ò
                                                                                                                                                                                                                                           셤
                                                                                                                                                                                                                                                                                             ð
                                                                                                                                                                                                                                                                                                                                       g
                                                                                                                                                                                                                                                                                                                                                                                      ò
                                                                                                                                                                                                                                                                                                                                                                                                                                      g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          /sex="Mixed (male and female)"
//sex="Mixed (male and female)"
/tissue_type="whole parasite"
/dev_stage="microfilaria (ii)"
/clone_lib="Brugia malayi Genomic Bac Library 3"
/clone_lib="Brugia malayi Genomic Bac Library 3"
/note="Vector: pBACe3.6; Site_l: BamH I; Brugia malayi genomic DNA was partially cleaved with Sau3A I and size fractionated 7,392 clones were generated with mean insert size -48 kbp. The library was constructed by Claire Whitton, Blaxter Nematode Genetics Lab, University of Edinburgh, UK, and Dr Mike Quail, The Pathogen Sequencing Unit, The Sanger Centre, Cambridge, UK."
                                                                                                                                                                                                                                                                                 Eukaryota: Metazoa; Nematoda; Chromadorea; Spirurida; Filarioidea; Onchocercidae; Brugia.

1 (bases I to 57.2)

Whitton, C., Daub, J., Mare, J., Quail, M., Hall, N., Barrell, B., Foster, J., Guiliano, D., Slatko, B. and Blaxter, M.
Genome survey sequences from the human parasitic nematode Brugia
                                                                                         BH795426 572 bp DNA linear GSS 09-APR-2002 BMBAC376G09T7_PSU Brugia malayi Genomic Bac Library 3 Brugia malayi
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Sequenced from the Brugia malayi BAC library constructed by Claire Whitton and Dr Mike Quail. The sequence was generated by The Pathogen Sequencing Unit, The Sanger Institute, Cambridge, UK in Edilaboration with Mark Blaxter, ICAPB, University of Edinburgh, UK Seq primer: T7 (TAATACGACTCATATAGGG)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              .----- 465
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     71 gGluLeuTyrValSerProGlyLeuSerLeuArgThrProAla-----LeuValGl 88
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           52 TyrProGlnValGluValArgCysGly-GluLeuAspAlaGluPheLeuCysSerAlaAr 71
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Institute of Cell, Animal and Population Biology
University of Edinburgh
Ashworth Labs, King's Buildings, West Mains Road, Edinburgh, EH9
166 CAAGAACTICGAAGAACGCGAACGCCTGTICGCCAAACCCGTAGAGGAGCTAGCG 412
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      504 TATCCATCCAAAAAATACGATTGGCACGAGATAAAAGCA----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             572
56
21
31
18
6
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Conservative:
Mismatches:
Indels:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Matches:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Location/Qualiflers
1. 572
/organism="Brugia malayi"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Length:
                                                                                                                                             genomic, genomic survey sequence.
BH795426
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Gaps:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            /mol_type="genomic DNA"/strain="TRS"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              'db_xref-"taxon:6279"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            US-09-701-229-2 (1-448) x BH795426 (1-572)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Tel: +44 131 650 6760
Fax: +44 131 670 5450
Email: mark.blaxter@ed.ac.uk
                                                                                                                                                                                       BH795426.1 GI:20043758
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        8.84e-14
213.50
61.11%
44.44%
9.45%
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Contact: Blaxter ML
                                                                                                                                                                                                                                         Brugia malayi
                                                                                                                                                                                                                                                                  Brugia malayi
                                                                                                                                                                                                                                                                                                                                                                                                                                                          Unpublished
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Percent Similarity:
Best Local Similarity:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               154
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Alignment Scores:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    164
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Best Local S
Query Match:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       source
                                                                     BH795426/c
                                                                                                             DEFINITION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               BASE COUNT
                                                                                                                                                                                                                                                          ORGANISM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Pred. No.:
                                                                                                                                                              ACCESSION
                                          RESULT 10
                                                                                                                                                                                     VERSION
KEYWORDS
SOURCE
                                                                                                                                                                                                                                                                                                                                  REFERENCE
                                                                                                                                                                                                                                                                                                                                                         AUTHORS
                                                                                                                                                                                                                                                                                                                                                                                                                                                       JOURNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            FEATURES
                                                                                                                                                                                                                                                                                                                                                                                                        TITLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                COMMENT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ORIGIN
```

g õ g

```
Direct Submission
Submitted (08-SEP-2000) Genoscope - Centre National de Sequencage,
2 rue Gaston Cremieux, CP 5706, 91057 EVPR cedex, FRANCE. (E-mail:
seqrefégenoscope.cns.fr - Web: www.genoscope.cns.fr)
This GSS is part of a random genomic sequencing program of thirteen
yeast species: Saccharomyces bayanus var. uvarum, Saccharomyces
exiguus, Saccharomyces servazzil, Zygosaccharomyces rouxil,
Saccharomyces kluyveromyces thermotolerans, Kluyveromyces
lactis var. lactis, Kluyveromyces marxianus var. marxianus, Pichia
angusta, Debaryomyces hansenii var. hansenii, Pichia sorbitophila,
Candida tropicalis and Yarrowia lipolytica. Genomic inserts of 3 to
5 kb were prepared and both extremities were sequenced. See
keywords for description of this sequence and for the sequence of
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ||||||| ::: ||||:::||| ||||:::
|GCCCTGACTCGCTCCTTCGGCGTGCCGGCCCGCGCGCGTCAGGGTCTGCGCGACCTC 143
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 SerGlyLeuAlaHisArgCysGlnTrpValArgGluArgGlnGlyValSerTyrTyrAsp 323
                                                                                                                                                                                                                   2 (bases 1 to 595)
Llorente, B., Malpertuy, A., Blandin, G., Artiguenave, F., Wincker, P.
and Dujon, B.
                                  Souciet, J.L., Aigle, M., Artiguenave, F., Blandin, G.,
Bolotin-Fukuhara, M., Bon, E., Brottier, P., Casaregola, S.,
de-Montigny, J., Dujon, B., Durrens, P., Lepingle, A., Llorente, B.,
Malpertuy, A., Neuvegilse, C., Ozier-Ralogeropoulos, O., Potier, S.,
Saurin, W., Tekala, F., Toffano Nioche, C., Wesolowski-Louvel, M.,
Wincker, P. and Weissenbach, J.
Genomic exploration of the hemiascomycetous yeasts: 1. A set of
yeast species for molecular evolution studies
10584711
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                264 ProValGlyGluLeuLysIleArgGlyAlaHisAsnTyrSerAsnAlaLeuAlaAlaLeu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           284 AlaLeuGlyHisAlaValGlyLeuProPheAspAlaMetLeuGlyAlaLeuLysAlaPhe
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      CCCACCTCGATGACGTCCGTTCTTTCGCCCCACACATGTCGAGAACGCCTTGGGGCAGT
                                                                                                                                                                                                                                                                                      Genomic exploration of the hemiascomycetous yeasts: 12. Kluyveromyces marxianus var. marxianus FEBS Lett. 487 (1), 71-75 (2000) 20584722
     Saccharomycetaceae; Kluyveromyces
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            others
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              595
63
31
84
18
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   murD ]
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     marxianus"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          10
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Matches:
Conservative:
Mismatches:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   /note-"similar to CAB08672 [
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             the other extremity of this insert. Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       /evidence=not_experimental
202 c 175 g 106
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      putative frameshift(s)"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             /organism="Kluyveromyces /mol_type="genomic DNA" /strain="CBS 712"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Length:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Indels:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     /db_xref="taxon:4911"
/clone="AZOAA010F07"
/clone_lib="AZOAA"
/note="end : T7"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            US-09-701-229-2 (1-448) x CNS070MQ (1-595)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          /variety="marxianus"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            б
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              9.46e-11
187.00
48.45%
32.47%
8.27%
                      (bases 1 to 595)
                                                                                                                                                                                                                                                                                                                                                                                     (bases 1 to 595)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Percent Similarity:
Best Local Similarity:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ø
                                                                                                                                                                                                                                                                                                                                                                                                          Genoscope
                                                                                                                                                                                                                                                                                                                                                                     11152887
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          102
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   misc_feature
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Scores:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   304
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      24
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               84
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Query Match:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                No.:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          BASE COUNT
                    REFERENCE
AUTHORS
                                                                                                                                                                                                                     PUBMED
REFERENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Alignment
                                                                                                                                                                                                       MEDLINE
                                                                                                                                                                                                                                                           AUTHORS
                                                                                                                                                                                                                                                                                                                               JOURNAL
                                                                                                                                                                                                                                                                                                                                                  MEDLINE
                                                                                                                                                                                                                                                                                                                                                                     PUBMED
                                                                                                                                                                                                                                                                                                                                                                                       REFERENCE
                                                                                                                                                                                                                                                                                                                                                                                                      AUTHORS
                                                                                                                                                                                                                                                                                                                                                                                                                                          JOURNAL
                                                                                                                                                                                  JOURNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                FEATURES
                                                                                                                                              TITLE
                                                                                                                                                                                                                                                                                           TITLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 COMMENT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ORIGIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Score:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Pred.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Ω
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           d
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              CNS070MQ 595 bp DNA linear GSS 06-JUL-2001
T7 end of clone AZ0AA010F07 of library AZ0AA from strain CBS 712 of
Kluyveromyces marxianus, genomic survey sequence.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             099
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               405
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ArgGlnAlaAlaGluLeuAlaArgGluGlyAspAlaValLeuLeuSerProAlaCysAla 425
                                                                                                                                                                                                                                                                                                                                                                                                                                          825
                                                                                                                                                                                                                                                                                                                                                                                                                                                                              313
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                765
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     333
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       705
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       334 LeuAlaAlaIleGluGlyLeuGlyAlaAspIleAspGlyLysLeuValLeuLeuAlaGly 353
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                GlyAspGlyLysGlyAlaAspPheHisAspLeuArgGluProValAlaArgPheCysArg 373
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     393
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            541
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   421
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           SerLeuAspMetPheLysAsnPheGluGluArgGlyArgLeuPheAlaLysAlaValGlu 445
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              420 AGCCTCGAAATTTGGAATGWATATGATGMMMGCGGTGACGATTTCGTCAGCGCGGCACGA 361
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Kluyveromyces marxianus
Eukaryota; Fung1; Ascomycota; Saccharomycotina; Saccharomycetes;
                                                                                                                                                                                                                                                                                                                                                                                                    274 HisAsnTyrSerAsnAlaLeuAlaAlaLeuAlaLeuGlyHisAlaValGlyLeuProPhe
                                                                                                                                                                                                                                                                                                                                                                                                                                        883 CACASAATGTCGAGAACGCTTGGCGCAGCTGCCGTAACTCGCTCTTC-GGCGTGCCGGCC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               824 CGCGCCGTGGGTCTGCGCGACCTCCACCTTSGCGSGCATCGTATCGAGACCGTC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   314 ArgGluArgGlnGlyValSerTyrTyrAspAspSerLysAlaThrAsnValGlyAlaAla
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      704 TTCTCYTCTWTGCGCGCCTTC-----GAGCACATCTTGTGGATCGCCGGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      374 AlavalvalLeuLeuGlyArgAspAlaGlyLeuIleAlaGlnAlaLeuGlyAsnAlaVal
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         600 GGAGCCATCGTGGAACCGACCGTGACGTCGTCGCCCAAGTCNTTGGCCGAGCACGCC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ProLeuValArgValAlaThrLeuAspGlu--------AlaVal
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          294 AspAlaMetLeuGlyAlaLeuLysAlaPheSerGlyLeuAlaHisArgCysGlnTrpVal
                                                                                                                                                                 22 others
                                                                                                                                                                                                                                    965
59
33
77
15
                                                                                                            murD
                                                                                                                                                                                                                                    Length:
Matches:
Conservative:
Mismatches:
                                                                                     complement(<355, .>836)
/note="similar to CABO8672 [
1 putative frameshift(s)"
                                                                                                                                              /evidence=not_experimental
275 c 310 g 159 t
                                                                                                                                                                                                                                                                                                              Indels:
                                                                                                                                                                                                                                                                                                                              Gaps:
/variety-"marxianus"
/db_xref="taxon:4911"
/clone="AZOAA010F07"
/clone_lib="AZOAA"
/note="end : T3"
                                                                                                                                                                                                                                                                                                                                                                  US-09-701-229-2 (1-448) x CNS070MR (1-965)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Kluyveromyces marxianus
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         AL423816.1 GI:12207010
                                                                                                                                                                                                                     4.88e-13
210.00
50.55%
32.42%
9.29%
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      CAAATT 355
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    GluLeu 447
                                                                                                                                                                                                                                                                        Percent Similarity:
Best Local Similarity:
Query Match:
                                                                                                                                                                 ø
                                                                                                                                                              199
                                                                                           misc_feature
                                                                                                                                                                                                                     Alignment Scores:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                354
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  629
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     406
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    446
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           426
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                DEFINITION
                                                                                                                                                              BASE COUNT
                                                                                                                                                                                                                                      Pred. No.:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ORGANISM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       VERSION
KEYWORDS
SOURCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ACCESSION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              RESULT 12
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 CNS070MQ
                                                                                                                                                                                  ORIGIN
                                                                                                                                                                                                                                                           Score:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              LOCUS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      QQ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      셤
                                                                                                                                                                                                                                                                                                                                                                                                      ð
                                                                                                                                                                                                                                                                                                                                                                                                                                      셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                          δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ŏ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ŏ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    õ
```

83

Fri

ò g à a ð g å g à 셤 ö g ò 셤

Location/Qualifiers

```
source
                                                                                                                                                                                 BASE COUNTORIGIN
                                                                                                                                                                                                                                                                  ..
9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   RESULT 14
BH369957/C
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ACCESSION
VERSION
KEYWORDS
SOURCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            DEFINITION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ORGANISM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   REFERENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      AUTHORS
  FEATURES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 TITLE
                                                                                                                                                                                                                                                                                         Score:
                                                                                                                                                                                                                                                                                                                                                                                                                                                 à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       qq
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               å
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ద
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       616 bp DNA linear GSS 10-DEC-2001
AG-ND-127115.TR ND-TAM Anopheles gambiae genomic clone AG-ND-127115
94383940
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        1 (bases 1 to 616)
Hong.Y.S., Hogan.J.R., Wang.X., Sarkar,A., Sim,C., Loftus,B.J., Ren
.C., Huff.E.R., Carlile,J.L., Black,K., Zhang,H.-B., Gardner,M.J.
and Collins,F.H.
                                                                                                                                         363
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       This clone is from an A. gambiae BAC library (ND-TAM) provided by F.H. Collins and sequenced by The Institute for Genomic Research (TIGR). The BAC library was generated from A. gambiae PEST strain DNA. All DNA was extracted from neally hatched first instar larvae to minimize the inclusion of DNA from microorganisms that inhabit the gut. The DNA is derived from mixed sexes of larvae. The BAC library was constructed at Texas A&M University BAC Center University, College Station, Texas 77843-2123, USA using a Hindili
                                                                                                                                                                                                                   Leu-ArgGluProValAlaArgPheCys-ArgAlaValValLeuLeuGlyArgAspAlaG 383
                                                                                                                                                                                                                                            383 lyLeuIleAlaGlnAlaLeuGlyAsnAlaValProLeuValArgValAlaThrLeuAspG 403
                                                                                                                                                                                                                                                                                                                                            365 ACGICKICGCCAAITHCITITCCGAGCACGCCCGCCAIKTICCCGICGICGICAICGAIG 424
                                                                                                                                                                                                                                                                                                                                                                                  ::
425 ACATTINGCGAGAATGCATGGCCAAGGCAGTNCGCGAGGCTGCCGAGATGGCCCGCCCG 484
                                                                                                                                                                                                                                                                                                                                                                                                                                                                415 lyAspAlaValLeuLeuSerProAlaCysAlaSerLeuAspMetPheLysAsnPheGluG 435
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Construction of a BAC library and generation of BAC end sequence-tagged connectors for genome sequencing of the African malaria mosquito Anopheles gambiae Mol. Genet. Genomics 268 (6), 720-728 (2003)
CACCTIGGCGGCCATCGTATCGAGACCGTCCATAAAGCTGGTGGCATCACCTGGGTCGAC
                                                                                                                                                              ----GAGCACATCGTGTGGATMGCCGGAGGCAG-GCCAAGGGCACCAACTTTGACGAC
                                                         AspSerIysAlaThrAsnValGlyAlaAlaLeuAlaAlaIleGluGlyLeuGlyAlaAsp
                                                                              344 IleAspGlyLysLeuValLeuLeuAlaGlyGlyAspGlyLysGlyAlaAspPheHisAsp
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Eukāryota; Metazoa; Arthropoda; Hexapoda; Insecta; Pterygota;
Neoptera; Endopterygota; Diptera; Nematocera; Culicoidea;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Other_GSSs: AG-ND-127115.TF
Contact: Brendan J Loftus
Department of Eukaryotic Genomics
The Institute for Genomic Research
9712 Medical Center Dr., Rockville, MD 20850, USA
Tel: 301 838 2343
Email: bjloftus@tigr.org
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            435 luArgGlyArgLeuPheAlaLysAlaValGluGluLeu 447
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              544 CCCGCGGTGACGATTTCGTCAACGCGCACGACAAATT 581
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Anopheles gambiae (African malaria mosquito)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 BH383040.1 GI:17329182
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Seq primer: M13 Rev
Class: BAC ends.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Anopheles gambiae
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Anopheles.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          12655398
                                                                                                                                                                             255
                                                      324
                                                                                                                                                                                                                     364
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 VERSION
KEYWORDS
SOURCE
ORGANISM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            RESULT 13
BH383040/c
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     DEFINITION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               JOURNAL
MEDLINE
PUBMED
COMMENT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        REFERENCE
AUTHORS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ACCESSION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        TITLE
```

```
AG-ND-138KI.TF ND-TAM Anopheles gambiae genomic clone AG-ND-138KI, genomic survey sequence.
BH369957
BH369957.1 GI:17316060
GSS.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Ren
                                                                                                                                                                                                                                                                                                                                                                                                                                                      250 AspGlyGlnLysTrpLeuAlaPheGlnPheAspLysLeuLeuProValGlyGluLeuLys 269
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           289
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  309
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            471 GACAATGAATTAGTCATTAAACTTCAGGACGACTTCAGAATGAAAATTTCTGATCTTTCA 412
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         330 ValGlyAlaAlaLeuAlaAlaIleGluGlyLeuGlyAlaAspIleAspGlyLysLeuVal 349
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              350 LeuLeuAlaGlyGlyAspGlyLysGlyAlaAspPheHisAspLeuArgGluProValAla 369
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      310 CysGlnTrpValArgGluArgGlnGlyValSerTyrTyrAspAspSerLysAlaThrAsn 329
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    183 TGGATTGTTGGTGGAATAGATAAGGAAATGACTATACAGAAATTGAGGATCTGGTAAAG 124
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     370 ArgPheCysArgAlaValValLeuLeuGlyArgAspAlaGlyLeuIleAlaGlnAlaLeu 389
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Anopheles.

1 (bases 1 to 495)

Hong Y.S., Hogan J.R., Wang, X., Sarkar, A., Sim, C., Loftus, B.J., Re, C., Huff, E.R., Carlile, J.L., Black, K., Zhang, H.-B., Gardner, M.J. and Collins, F.H.

Construction of a BAC library and generation of BAC end sequence-tagged connectors for genome sequencing of the African
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             270 IleArgGlyAlaHisAsnTyrSerAsnAlaLeuAlaAlaLeuAlaLeuGlyHisAlaVal
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              290 GlyLeuProPheAspAlaMetLeuGlyAlaLeuLysAlaPheSerGlyLeuAlaHisArg
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Anopheles gambiae (African malaría mosquito)
Anopheles gambiae
Eukaryota: Metazoa; Arthropoda; Hexapoda; Insecta; Pterygota;
Neoptera; Endopterygota; Diptera; Nematocera; Culicoidea;
/organism="Anopheles gambiae"
/mol_type="genomic DNA"
/strain="pesq"
/db_xxef="texon:7165"
/clone="AG-ND-127115"
/clone=lib="ND-TAM"
/note="vector: BCBAC1; Site_1: HindIII"
2 a 134 c 87 g 213 t
                                                                                                                                                                                                                                                      616
28
28
4
1
                                                                                                                                                                                                                                                                                             Conservative:
Mismatches:
Indels:
                                                                                                                                                                                                                                                      Length:
Matches:
                                                                                                                                                                                                                                                                                                                                                                   Gaps:
                                                                                                                                                                                                                                                                                                                                                                                                            US-09-701-229-2 (1-448) x BH383040 (1-616)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           390 GlyAsnAlaValProLeuVal 396
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    63 AGAAACAAAAGGATTTGATT 43
                                                                                                                                                                                                                                             1.3e-10
186.00
50.34%
31.29%
8.23%
                                                                                                                                                                                                                                                                                                                    Best Local Similarity:
Query Match:
                                                                                                                                                                 182
                                                                                                                                                                                                                                                                                             Percent Similarity:
                                                                                                                                                                                                                                 Alignment Scores:
```

```
BH382726 378 bp DNA linear GSS 10-DEC-2001
AG-ND-127B23.TR ND-TAM Anopheles gambiae genomic clone AG-ND-127B23
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 This clone is from an A. gambiae BAC library (ND-TAM) provided by Fr.H. Collins and sequenced by The Institute for Genomic Research (TIGR). The BAC library was generated from A. gambiae PEST strain DNA. All DNA was extracted from newly hatched first instar larvae to minimize the inclusion of DNA from mixed sexes of larvae. The BAC library was constructed at Texas A&W University BAC Center University, College Station, Texas 77843-2123, USA using a HindIII
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Hong, Y.S., Hogan, J.R., Wang, X., Sarkar, A., Sim, C., Loftus, B.J., Re, C., Huff, E.R., Carlile, J.L., Black, K., Zhang, H.-B., Gardner, M.J. and Collins, F.H.
                                                                                                                                                                                                                                                                                                                                           Construction of a BAC library and generation of BAC end sequence-tagged connectors for genome sequencing of the African
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          267 GluLeuLysIleArgGlyAlaHisAsnTyrSerAsnAlaLeuAlaAlaLeuAlaLeuGly
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     HisAlaValGlyLeuProPheAspAlaMetLeuGlyAlaLeuLysAlaPheSerGlyLeu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           315 AAACTGCTAAATATTAGTAATGAAAGTATCCGCAATAGTCTGATGACATTTCAGGCTGTT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      AlaHisArgCysGlnTrpValArgGluArgGlnGlyValSerTyrTyrAspAspSerLys
                                                                                                                                                                                               Eukaryota; Metazoa; Arthropoda; Hexapoda; Insecta; Pterygota;
Neoptera; Endopterygota; Diptera; Nematocera; Culicoidea;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Contact: Brendan J Loftus
Department of Eukaryotic Genomics
The Institute for Genomic Research
9712 Medical Center Dr., Rockville, MD 20850, USA
Far: 301 838 3543
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ; Site_1: HindIII"
133 t
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 4524
2534
1456
                                                                                                                                                                                                                                                                                                                                                                                                             Mol. Genet. Genomics 268 (6), 720-728 (2003) 22542063
                                                                                                                                                    Anopheles gambiae (African malaria mosquito)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Conservative:
Mismatches:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                1. .378
/organism="Anopheles gambiae"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Matches:
                                                                                                                                                                                                                                                                                                                                                                                           malaria mosquito Anopheles gambiae
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Length:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Indels:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          /clone="AG-ND-127B23"
/clone_lib="ND-TAM"
/note="Vector: pECBAC1;
85 c 52 g 13
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  /mol_type="genomic DNA" /strain="PEST"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 US-09-701-229-2 (1-448) x BH382726 (1-378)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   /db_xref="taxon:7165"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Location/Qualifiers
                                                                   genomic survey sequence.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Email: bjloftus@tigr.org
                                                                                                          GI:17328868
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 2.38e-09
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Seq primer: M13 Rev
                                                                                                                                                                                                                                                            (bases 1 to 378)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 172.00
52.00%
33.60%
7.61%
                                                                                                                                                                             Anopheles gambiae
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         BAC ends
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               partial digest.
                                                                                                          вн382726.1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Percent Similarity:
Best Local Similarity:
Query Match:
                                                                                                                                                                                                                                        Anopheles.
                                                                                                                                                                                                                                                                                                                                                                                                                                                            12655398
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Class:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Alignment Scores:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     375
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  287
                                        DEFINITION
вн382726/с
                                                                                                                                                                         ORGANISM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Pred. No.:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           BASE COUNT
                                                                                                                                                                                                                                                                                                                                                                                                                                 MEDLINE
PUBMED
                                                                                        ACCESSION
                                                                                                          VERSION
KEYWORDS
SOURCE
                                                                                                                                                                                                                                                              REFERENCE
                                                                                                                                                                                                                                                                                 AUTHORS
                                                                                                                                                                                                                                                                                                                                                                                                               JOURNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              FEATURES
                                                                                                                                                                                                                                                                                                                                                TITLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                COMMENT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ORIGIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Score:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                δy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Óγ
                                                                                                                                                                                                                               This clone is from an A. gambiae BAC library (ND-TAM) provided by FH. Collins and sequenced by The Institute for Genomic Research. (TIGR). The BAC library was generated from A. gambiae PEST strain DNA. All DNA was extracted from newly, hatched first instar larvae to minimize the inclusion of DNA from microorganisms that inhabit the gut. The DNA is derived from mixed sexes of larvae. The BAC library was constructed at Texas A&M Universty BAC Center University, College Station, Texas 77843-2123, USA using a HindIII
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                273
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 272 GCAGTTATTAATGATGTGAAATACATCAATGACAGTAAGGCAACCAATGTAAATGCTGCA 213
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       334 LeualaalaIleGluGlyLeuGlyAlaAspIleAspGlyLysLeuValLeuLeuAlaGly 353
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       165
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             354 GlyAspGlyLysGlyAlaAspPheHisAspLeuArgGluProValAlaArgPheCysArg 373
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             274 HisAsnTyrSerAsnAlaLeuAlaAlaLeuAlaLeuGlyHisAlaValGlyLeuProPhe 293
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      314 ArgGluArgGlnGlyValSerTyrTyrAspAspSerLysAlaThrAsnValGlyAlaAla 333
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   374 AlaValValLeuLeuGlyArgAspAlaGlyLeuIleAlaGlnAlaLeuGlyAsnAlaVal 393
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              294 AspAlaMetLeuGlyAlaLeuLysAlaPheSerGlyLeuAlaHisArgCysGlnTrpVal
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              212 TATTATGCACTGGAA------AGTGTGAAATATCCTGCAATATGGATTGTTGGT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          104 GCCATCGTATGTCTGGGATTGGATAATGAAAGGTCATTCAGTTCTTCAGAAACAAAAAG
                                                                                                                                                MD 20850, USA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        /clone="AG-ND-138K1"
/clone_lib="ND-TAM"
/note="Vector: pECBAC1; Site_1: HindIII"
110 c 68 g 174 t
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ProLeuVal --- ArgValAlaThrLeuAspGluAlaValArg 406
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 GATTTGATTTTGAAACCTCTAGCATGGAAGAATGTGTAAAG 3
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               495
43
27
59
5
                    Genet. Genomics 268 (6), 720-728 (2003)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Length:
Matches:
Conservative:
Mismatches:
Indels:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    /organism="Anopheles gambiae"
                                                                              Contact: Brendan J Loftus
Department of Eukaryotic Genomics
The Institute for Genomic Research
9712 Medical Center Dr., Rockville,
Tel: 301 838 0208
Fax: 301 838 3543
  qambiae
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Gaps:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         /mol_type="genomic DNA/strain="PEST"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      /db_xref="taxon:7165"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                US-09-701-229-2 (1-448) x BH369957 (1-495)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Location/Qualifiers
  nalaria mosquito Anopheles
                                                                                                                                                                                                             Email: bjloftus@tigr.org
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             3.15e-09
172.50
52.24%
32.09%
7.63%
                                                                                                                                                                                                                                                                                                                                                                                                                      partial digest.
Seq primer: M13 For
Class: BAC ends.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                1. .495
                                                                                                                                                                                                                                                                                                                                                                                                          partial digest.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Best Local Similarity:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              đ
                             MOI. Gene
22542063
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Percent Similarity:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Alignment Scores:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           394
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   44
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Query Match:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            BASE COUNT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Pred. No.:
                                      MEDLINE
PUBMED
                    JOURNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                RESULT 15
                                                                                                                                                                                                                                                                                                                                                                                                                                                                            FEATURES
                                                                                   COMMENT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ORIGIN
```

ò g g

ð g

δ

δ 염 δ ò d ä

a

316 306

```
405 ValArgGlnAlaAlaGluLeuAlaArgGluGlyAspAlaValLeuLeuSerProAlaCys 424
                                                                                                                                                                                                                                                                                                                                                                                                                                                               GCCAAGCUUCGUGAUGUGGACAAUCAAACCAUCAAGGAAACUCUUUCAGCUUCGGUGGU
                                                                                                                                                                                                                                                                                                                      366 GluProValAlaArgPheCysArgAlaValValLeuLeuGlyArgAspAlaGlyLeuIle
                   GlyGluLeuLysIleArgGlyAlaHisAsnTyrSerAsnAlaLeuAlaAlaLeuAlaLeu
                                    GlyHisAlaValGlyLeuProPheAspAlaMetLeuGlyAlaLeuLysAlaPheSerGly
                                                                                                                                      LeuAlaHisArgCysGlnTrpValArgGluArgGlnGlyValSerTyrTyrAspAspSer
                                                                                                                                                                   GUCAAACACCGUCUCCAGUUUGUGGAUGACAUCAAGGGUGUUAAAUUCUAUAACGACAGU
                                                                                                                                                                                                 LysalaThrasnValGlyAlaAlaLeuAlaAlaIleGluGlyLeuGlyAlaAspIleAsp
                                                                                                                                                                                                                                                            GlyLysLeuValLeuLeuAlaGlyGlyAspGlyLysGlyAlaAspPheHisAspLeuArg
                                                                                                                                                                                                                                                                                                                                                                                   386 AlaGlnAlaLeuGlyAsnAla---ValProLeuValArgValAlaThrLeuAspGluAla
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         AlaSerLeuAspMetPheLysAsnPheGluGluArgGlyArgLeuPheAlaLysAlaVal
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Mur D of Streptococcus
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Version #1.30
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        GENERAL INFORMATION:
APPLICANT: SKatrud, Paul
APPLICANT: Peerry, Robert
APPLICANT: Hoskins, John
APPLICANT: Wu, Chyun-Yeh Earnest
ITILE OF INVENTION: Biosynthetic Gene Mu:
NUMBER OF SEQUENCES: 3
CORRESSER: Eli Lilly and Company
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       MEDIUM TYPE: Floppy disk
COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
SOFTWARE: PATENTIN Release #1.0,
CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/08/843,309
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ADDRESSEE: Eli Lilly and Compa
STREET: Lilly Corporate Center
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Sequence 1, Application US/08843309
Patent No. 5834270
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              39,872
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                NAME: Webster, Thomas D
REGISTRATION NUMBER: 39,872
REFERENCE/DOCKET NUMBER: X-
TELECOMMUNICATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ATTORNEY/AGENT INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         COMPUTER READABLE FORM: MEDIUM TYPE: Floppy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ||||||
| 1336 GCGGAGUUA 1344
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    445 GluGluLeu 447
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             CITY: Indianapolis
STATE: Indiana
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   CLASSIFICATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           46285
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             COUNTRY:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               US-08-843-309-1
                 997
                                                                                                                                                                   928
                                                                                                                                                                                                                             988
                                                                                                                                                                                                                                                            346
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         425
                                                                                                       868
                                                                                                                                      306
                                                                                                                                                                                                 326
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   FILING
                                            g
                                                                                                   Op
                                                                                                                                     ŏ
                                                                                                                                                                   엄
                                                                                                                                                                                                                          g
                                                                                                                                                                                                                                                            δy
                                                                                                                                                                                                                                                                                        셤
                                                                                                                                                                                                                                                                                                                      ŏ
                                                                                                                                                                                                                                                                                                                                                   g
                                                                                                                                                                                                                                                                                                                                                                                   ð
                                                                                                                                                                                                                                                                                                                                                                                                               셤
                                                                                                                                                                                                                                                                                                                                                                                                                                             à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                          g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ŏ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  셤
                                                                          ò
                                                                                                                                                                                                 ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               134
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             411
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       228
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      AspGlyMetAlaAspTyrHisLeuAlaLysHisArgIle-'-----PheArgGlyAla 209
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           651
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ------ValProCysTrpSerPheGlyLeuAsnLysProAspPheLysAlaPheGly 245
                                                                                                                                                                                                                                                                                                                                                                                                                             183
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          234
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      :::||||||||:::
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  114
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                351
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        135 AspLysArgValAlaValGlyGlyAsnLeuGlyThrProAlaLeuAspLeu----Leu 152
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         AlaAspAspIleGluLeuTyrValLeuGluLeuSerSerPheGlnLeuGluThrCysAsp 172
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               173 ArgLeuAsnAlaGluValAlaThrValLeuAsnValSerGluAspHisMetAspArgTyr 192
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              591
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    GAUUUCCUUGUCUUGAACUUUAAUCAAGACUUGGCAAAAGACUUGACUUCCAAGACAGAA 711
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              LeulleGluGluAspGlyGlnLysTrpLeuAlaPheGlnPheAspLysLeuLeuProVal 265
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 39
                                                                                                                                                                                                                                                                                                                                                                                                 59
                                                                                                                                                                                                                                                                                                                                                                                                                                                             74
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        94
                                                                                                                                                                                                                                                                       AspHisPheArg-----IleValValGlyLeuGlyLysSerGlyMetSerLeu
                                                                                                                                                                                                                                                                                          GCUCGUUGGUGGACAAGCUAGGUGCCAUUGUGACAGUAAAUGAUGGGAAACCUUUCGAG
                                                                                                                                                                                                                                                                                                                                                                                               GluAsnProProGluLeuAlaThrLeuArgAlaGlnTyrProGlnValGluValArgCys
                                                                                                                                                                                                                                                                                                                                                                                                                             GACAAUCCAGCUGCCCAAAGUUUGCUGGAA------GAAGGGAUCAAGGUCAUUACA
                                                                                                                                                                                                                                                                                                                                                                                                                                                           ------LeuAspAlaGluPheLeuCysSerAlaArgGluLeuTyr
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        GGUGGCCAUCCUUUGGAACUCUUGGAUGAAGAGUUUGCCCCUUAUGGUGAAA-----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ValSerProGlyLeuSerLeuArgThrProAlaLeuValGlnAlaAlaAlaLysGlyVal
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ArgileSerGlyAspileAspLeuPheAlaArgGluAlaLysAlaProileValAlaile
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     115 ThrGlySerAsnAlaLysSerThrValThrThrLeuValGlyGluMetAlaValAlaAla
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              GAAUUCCAUCCAGCGAGUGGGGGUADUACCAACCUCAUGCCAACUCCAUGCACUACCAU
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       GGGUCAUUUCUGAAUAUGUAGCAGCCAAGUGGAAUAUCCAGAACAAGAUGACAGCAGCU
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      210 ArgGlnValValAsnArgAlaAspAlaLeuThrArgProLeuIleAlaAspThr---
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                GCCACUGUGUACCAUUUUCAACA-----CUUGAAAAGGUUGAU------GGA
                                                                                                                                                                                                                                                                                                                                     23 ValArgTyrLeuAlaArgArgGlyLeuProPheAlaValValAspThrArg-
                                                                                                                                                                 Conservative:
Mismatches:
Indels:
                                                                                                                                                                                                                                         US-09-701-229-2 (1-448) x US-08-843-309-3 (1-1350)
                                                                                                                                      Length:
Matches:
                                                                                                                             1.86e-55
586.50
52.92%
34.99%
25.95%
                 single
TYPE: nucleic acid
STRANDEDNESS: singl
TOPOLOGY: linear
MOLECULE TYPE: MRNA
HYPOTHETICAL: NO
   nucleic acid
                                                                                                                                                                                                                                                                                                                                                                                                                                                           GlyGlu-----
                                                                                                                                                         Percent Similarity:
Best Local Similarity:
Query Match:
DB:
                                                                          ; ANTI-SENSE: NO US-08-843-309-3
                                                                                                                      Alignment Scores:
                                                                                                                                                                                                                                                                                                      13
                                                                                                                                                                                                                                                                                                                                                                 73
                                                                                                                                                                                                                                                                                                                                                                                                                             133
                                                                                                                                                                                                                                                                                                                                                                                                                                                           9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        184
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    235
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 95
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      112
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    153
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  472
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             532
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         193
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         592
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    652
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              712
                                                                                                                                                                                                                                                                                                                                                                                               40
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      75
                                                                                                                                      ..
Q
                                                                                                                                                      Score:
                                                                                                                                                                                                                                                                        ŏ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ŏ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                δy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ద
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    g
                                                                                                                                                                                                                                                                                                   a
                                                                                                                                                                                                                                                                                                                                   δ
                                                                                                                                                                                                                                                                                                                                                                 셤
                                                                                                                                                                                                                                                                                                                                                                                               ď
                                                                                                                                                                                                                                                                                                                                                                                                                                                           à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           õ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ò
```

1155

404

444

pneumoniae

LOCATION: NAME/KEY: US-08-843-309-1 FEATURE

TELEPHONE: 317-276-3334
TELEFAX: 317-276-3861
INFORMATION FOR SEQ ID NO: 1:
SEQUENCE CHARACTERISTICS:
LENGTH: 1353 base pairs
TYPE: nucleic acid
STRANDEDENESS: single TOPOLOGY: linear MOLECULE TYPE: DNA(genomic) HYPOTHETICAL: NO ANTI-SENSE: NO

Length:
Matches:
Conservative:
Mismatches: 1.87e-55 586.50 52.928 34.998 25.958 Alignment Scores:

1353 162 83 177 41 US-09-701-229-2 (1-448) x US-08-843-309-1 (1-1353) Percent Similarity: Best Local Similarity: Query Match: .. 02

73 GCTCGTTTGTTGGACAAGCTAGGTGCCATTGTGACAGTAAATGATGGAAACCTTTCGAG 132 133 GACAATCCAGCTGCCCAAAGTTTGCTGGAA-----GAAGGGATCAAGGTCATTACA 183 184 GGTGGCCATCCTTTGGAACTCTTGGATGAAGAGTTTGCCCCTTATGGTGAAA----- 234 ---AATCCAGGTATCCCCTACAACAATCCCATGATTGAAAAGGCTTTGGCCAAGAGAATT 291 95 ArgileSerGlyAspileAspLeuPheAlaArgGluAlaLysAlaProlleValAlalle 114 GluAsnProProGluLeuAlaThrLeuArgAlaGlnTyrProGlnValGluValArgCys 59 7 AspHisPheArg-----IleValValGlyLeuGlyLysSerGlyMetSerLeu 22 ||| ||||::: GATCAATTTAAAAATAAGAAAGTTCTTGTTTTTAGGTTTGGCCAAGTCTGGTGAATCTGCA 72 75 ValSerProGlyLeuSerLeuArgThrProAlaLeuValGlnAlaAlaAlaLysGlyVal 23 ValArgTyrLeuAlaArgArgGlyLeuProPheAlaValValAspThrArg-----40 235 셤 ò à 셤 à g g õ

115 ThrGlySerAsnAlaLysSerThrValThrThrLeuValGlyGluMetAlaValAlaAla 134 135 AspLysArgValAlaValGlyGlyAsnLeuGlyThrProAlaLeuAspLeu-----Leu 152 153 AlaAspAspIleGluLeuTyrValLeuGluLeuSerSerPheGlnLeuGluThrCysAsp 172 173 ArgLeuAsnAlaGluValAlaThrValLeuAsnValSerGluAspH1sMetAspArgTyr 192 ::: |||:::||| ::: |||532 GAATTCCATCCCAGGAGTTGCGATTACCATCATCATATCGACTACCAT 591 193 AspGlyMetAlaAspTyrHisLeuAlaLysHisArgIle-----PheArgGlyAla 209 ArgGlnValValValAsnArgAlaAspAlaLeuThrArgProLeuIleAlaAspThr--- 228 592 GGGTCATTTTCTGAATATGTAGCAGCCAAGTGGAATATCCAGAACAAGATGACAGCAGCT

> g ð

ð

Qy	229	LysAlaPheGly	245
QQ	712	GCCACTGTTGTACCATTTTCAACACTTGAAAAGGTTGATGGA	753
, Xo	246	LeuIleGluGluAspGlyGlnLysTrpLeuAlaPheGlnPheAspLysLeuLeuProVal	265
qa	754	GCTTATCTGGAAGATGGTCAACTCTACTTCCGTGGTGGTAGTCATGGCAGCG	807
Qy	266		285
qa	808	808 AATGAAATCGGTGTTCCAGGTAGCCACAATGTGGAAAATGCCCTTGCGACTATTGCTGTA	867
٥y	286		305
QQ	898	868 GCCAAGCTTCGTGATGTGGACAATCAAACCATCAAGGAAACTCTTTCAGCCTTCGGTGGT	927
Qy	306		325
qq	928	GTCAAACACCGTCTCCAGTTTGTGGATGACATCAAGGGTGTTAAATTCTATAACGACAGT	987
Qy	326		345
qq	988		1038
٥y	346	GlyLysLeuValLeuLeuAlaGlyGlyAspGlyLysGlyAlaAspPheH1sAspLeuArg	365
qq	1039	AGCAAGGICGTCTTGATTGCAGGTGGTTTGGACCGTGGCAATGAGTTTGAGGATTG:	1095
Qy	366		385
qq	1096	1096 GTGCCAGACATTACTGGACTCAAGAAGATGGTCATCCTGGGTCAATCTGCAGAACGTGT	1155
θŷ	386	386 AlaGlnAlaLeuGlyAsnAla ValProLeuValArgValAlaThrLeuAspGluAla	404
ą	1156		1215
Qy	405		424
qa	1216	1216 ACCCGCAAGGCCTATGAGCTTGCGACTCAAGGAGATGTGGTTCTTTTTAGTCCTGCCAAT :	1275
٥y	425		444
ą	1276	GCCAGCTGGGATATGTATGCTAACTTTGAAGTACGTGGCGACCTCTTTATCGACACATA	1335
ογ	445	GluGluLeu 447	
qq	1336	GCGGAGTA 1344	

Search completed: August 14, 2003, 09:37:52 Job time : 1636 secs

94

::: :::::!|||||||::: ||||
292 CCAGTCTTGACTGGTGGGGTTATTTGATTTCAGAAGCACCGATTATTGGTATC 351

g

ð g ò 유 ò 윱 à g

12 BE966412 601660465 0 AL825430 AL825430 83 BE586183 Est7-4-5_ 96 CB061196 4011803 B											, , ,	1 CC008801 AL695087	9 CC008799 6 AY079596	BU900243 BZ567557 AL432558	ALIGNMENTS		BZ568959 BZ568959 BZ568959 Pacs2-164_8171.y2 pacs2-164 Pseudomonas aeruginosa genomic clone pacs2-164_8171, genomic survey sequence.	•	occiononas aeruginosa Pseudomonas aeruginosa Barteria: Droteopharteria: Gammanroteopharteria: Desudomonadales:		Spencer, D.H., Kaymond, C.K., Sm.tn, E., Sims, E.E., Hastings, M., Burns, J.L., Kaul, R. and Olsen, M.V. Whole-Genome-Sequence variation among multiple isolates of	y ess	5-2145, USA	npə.
BE966412 AL825430 BE586183 CB061196	AA96904 BI3064	AW77120 CB0421 BF6570	AW1392/ AW13618 BQ5525 BF1094	AA01325 AA01325 BH7991	BY0809 AT29179	BH3764 BU0405	BQ2863 BI7927	BI7928 BU0430	BQ2697 BQ0404	AI819231 BX126826	AW191059 BZ781755		4		ALIG		1445 cs2-164 mic surv	799	88 88 84 94 19	Pseudomonas 15)	d,C.K., and Olse e variat	a librar 2) In pr ymond	gton WA 9810	shington alifiers
1754 10 537 9 687 10 265 14		286 9 289 14 301 10								633 9 634 29				911 13 928 29 1085 29			71.y2 pa	GI:27202	aeruginosa aeruginosa	ceae; Ps to 1445)	, kaymon Kaul,R. :-Sequenc	eruginos , (200 is K. Ra	r f Washin Seattle,	62215954 6685244 craymond@u.washington.edu shotgun Location/Qualifiers
11 H L .	4.4.	*****		4.4.4.4.4.4.4.4.4.4.4.4.4.4.4.4.4.4.4.	4.4.4	4.4	1 T T	4.4.4	 	. 4. 4.	4.4.	* * *	. <del>.</del> .	444 444			68959 s2-164_81 s2-164_81	68959 <del>-</del> 68959.1	Pseudomonas Pseudomonas	seudomonadaceae; (bases 1 to 14	ncer,D.H. ns,J.L., le-Genome	Psedomonas aeruginosa library J. Bacteriol., (2002) In press Contact: Chris K. Raymond	Genome Center University of Washington Box 352145, Seattle, WA 98105-2145,	: 2062216 : 2066857 il: craym ss: shotg
2223	212	70007	00000	0000	288	888	282	222	200	555	200	288	200	200				_	Σ				Gen Uni Box	
0000 897	c 10	c 112	c 17 c 17 18	20 20 20 20 20 20 20 20 20 20 20 20 20 2	c 23	25 26	c 27	30 30	3 7 F	35 35		ე 8 8 9 0 0	0 4 4 4 1 2 4	C 44 C 44 C 44		RESULT 1 BZ568959/c	LOCUS	ACCESSION VERSION	SOURCE	REFERENCE	TITLE	JOURNAL		FEATURES
								-								<del></del>								<u> </u>
		ပ																						
GenCore version 5.1.6 t (c) 1993 - 2003 Compugen Ltd.	h, using sw model	2003, 04:12:30 ; Search time 2898 Seconds (without alignments) 12160.625 Million cell updates/sec	229-1 teggeetegecatgttgageeggeaeggeate 1450	, Gapext 60.0	eqs, 12152238056 residues		fying chosen parameters: 45562784	0000000	irst 45 summaries	ba:*	hum:*   In: *	::-:: 0]:**		1:* t2:* o:*	t3:* t4:* tfun:*	ton:* s_inn:*	s_pln:* s_turt:*	mam: * July : * norto: *		81.*	sults predi	alysis of the total score distribution. SUMMARIES	ID Descriptio	45 29 BZ568959 BZ568959 pacs2-164 92 29 BZ579116 BZ579116 msh2_6205 71 29 BZ559806 BZ559806 pacs2-164 94 29 BZ550283 BZ550283 pacs1-60_
version 5.1.6 - 2003 Compugen	30	04:12:30 ; Search time 2898 Seconds (without alignments) 12160.625 Million cell upd		Gapext 60.		0	f hits satisfying chosen parameters:	seq length: 0 seq length: 200000000		H	em_esthum em_estin:	em_estov			12: 9D_est3:* 13: 9D_est4:* 14: 9D_est5:* 15: em_estfun:*		19: em_gss_pln:* 20: em_gss_vrt:* 21: em_gss_fun:*			28: gb_gssl:* 29: gb_gss2:*	No. is the number of results predicted by chance to have greater than or equal to the score of the result being pr	l by analysis	Descriptio	BZ568959 BZ579116 BZ579116 BZ559806 BZ559806 BZ550283

source

BASE COUNT

ORIGIN

à 셤 ò 셤 à .g ò 셤 à g à 원 à g ö 셤 ð g ð 셤

```
B$559806 1171 bp DNA linear GSS 17-DEC-2002 pacs2-164_1863.xl pacs2-164 Pseudomonas aeruginosa genomic clone pacs2-164_1863, genomic survey sequence.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ACCTGCTGGCCGACGACATCGAGCTGTACGTGTTGGAGCTGTCGAGCTTCCAGCTGGAAA 558
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           319 CCGCGAAAGGCGTGCGCATCTCCGGTGACATCGATCTTTCGCCCCGCGAGGCGAAAGGCCC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                379 CGATCGTCGCCATCACCGGTTCCAACGCGAAGAGCACCGTGACCACCCTGGTGGGCGAAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             TGGCGGTGGCCGCGGACAGCGTGTCGCCGTCGCGGGCAACCTCGGCACCCCGGGGCTCG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              CCTGCGATCGCCTCAACGCCGAGGTGGCGACCGTGCTGAACGTCAGCGAAGACCATATGG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          404 CCTGCGATCGCCTCAACGCCGAGGTGGCGACGTGCTGAACGTCAGCGAAGACCATATGG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              284 GCCAGGTCGTGGTGAATCGCGCCGATGCCCTGACCCGACCGCTGATCGCCGATACCGTGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           CGTGCTGGTCGTTCGGCCTGAACAAGCCGGACTTCAAGGCTTTCGGCCTGATCGAGGAAG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      799. ACGCCCAGAAGTGGCTGGCGTTCCAGTTCGACAAGCTGCTGCCGGTTGGCGAACTGAAGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    GCCAGGTCGTGGTGATCGCGCCGATGCCCTGACCCGACCGCTGATCGCCGATACCGTGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ATCGCTACGACGGCATGGCTGACTACCACCTGGCCAAGCACCGGATCTTCCGCGGTGCCC
                                                                                                                                                                                                                                                      /clone_lib="msh"
/note="Environmental isolate. Whole genomic shotgun
                                                                                                                                                                                                                                                                                                                                           Length 892;
                                                                                                                                                                                                                                                                                                    6 others
                                                                                                                                                                                                                                                                                                                                                                          Indels
                                                                                                                                                                                aeruginosa"
                                                                                                                                                                                                                                                                                                                                            Score 510; DB 29;
Pred. No. 8.4e-244;
0; Mismatches 1;
                                                                           USA
                                                          University of Washington
Box 352145, Seattle, WA 98105-2145, US
Tel: 2062816954
Fax: 2066857244
Emall: craymondeu.washington.edu
Class: shotgun.
                                                                                                                                                                                                                                                                                                   160 t
                                                                                                                                                          1. 892
/organism="Pseudomonas
/mol_type="genomic DNA"
/strain="MSH"
                  J. Bacteriol., (2002) In press
Contact: Chris K. Raymond
Genome Center
    Psedomonas aeruginosa library
                                                                                                                                                                                                                          /db_xref="taxon:287"
/clone="msh2_6205"
                                                                                                                                                                                                                                                                                                    5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 859 TCCGTGGCGCCCACAACTATT 879
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             84
                                                                                                                                                                                                                                                                                                   276
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                TCCGTGGCGCCCACAACTATT
                                                                                                                                                                                                                                                                                                                                            35.2%;
al Similarity 99.8%;
560; Conservative
                                                                                                                                                                                                                                                                                     11brary."
277 c
                                                                                                                                                                                                                                                                                                   173
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              559
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  619
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           439
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                464
                                                                                                                                                                                                                                                                                                                                              Query Match
Best Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     499
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         619
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           739
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             104
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    LOCUS
DEFINITION
                                                                                                                                                                                                                                                                                                   BASE COUNT
ORIGIN
                                                                                                                                                                                                                                                                                                                                                                        Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        RESULT 3
BZ559806
                                                                                                                                                   FEATURES
                                  COMMENT
                                                                                                                                                                                                                                                                                                                                                                                                                                   g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 g
                                                                                                                                                                                                                                                                                                                                                                                                         ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           å
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     å
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      òγ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ò
                                                                                                                                                                                                             ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   B2579116

B2579116

B2579116

B2579116

B2579116

B2579116.1

B2579116.1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     968 GCCTCATCGCTGCCAGTGGGTACGCGAGCGGCAGGGCGTGAGCTACTACGACGATTCCAA 1027
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                GGCCACCAACGTCGGCGCCCCTGGCGGCGATCGAGGGGCTGGGTGCCGACATCGACGG 1087
                                                                                                                                                                                                                                                                     617
                                                                                                                                                                                                                                                                                                   607
                                                                                                                                                                                                                                                                                                                              557
                                                                                                                                                                                                                                                                                                                                                            667
                                                                                                                                                                                                                                                                                                                                                                                         497
                                                                                                                                                                                                                                                                                                                                                                                                                     727
                                                                                                                                                                                                                                                                                                                                                                                                                                                   437
                                                                                                                                                                                                                                                                                                                                                                                                                                                                              787
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            377
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         847
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             967
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      317
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    907
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                257
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           11
                                                                                                                                                                                                                                                                                                                                                                                                                  CGATACCGTGCCGTGCTGGTTCGGCCTGAACAAGCCGGACTTCAAGGCTTTCGGCCT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              GATCGAGGAAGACGGCCAGAAGTGGCTGCCGTTCCAGTTCGACAAGCTGCTGCCGGTTGG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       GATCGAGGAAGACGGCCAGAAGTGGCTTGGCGTTCCAGTTCGACAAGCTGCTGCTGCTTGG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 CGAACTGAAGATCCGTGGCGCCCACAACTATTCCAACGCGCTCGCCGCGCTGGCGCTGGG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Bacteria; Proteobacteria; Gammaproteobacteria; Pseudomonadales; Pseudomonadaceae; Pseudomonas.

1 (bases 1 to 0 92)
Spendor.b. H., Raymond.C.K., Smith, E.E., Sims, E.E., Hastings, M., Burns, J.L., Kaul, R. and Olsen, M.V.
                                                                                                                                                                                                                                      CCCGGCGCTCGACCTGCTGGCCGACGATCGAGCTGTACGTGTTGGAGCTGTCGAGCTT
                                                                                                                                                                                                                                                                                                 CCAGCTGGAAACCTGCGATCGCCTCAACGCCGAGGTGGCGACCGTGCTGAACGTCAGCGA
                                                                                                                                                                                                                                                                                                                                                          AGACCATATGGATCGCTACGACGGCATGGCTGACTACCACCTGGCCAAGCACCGGATCTT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Gaps
1. .1445
// Corganism="Pseudomonas aeruginosa"
//mol_type="genomic DNA"
/strain=2-164"
/db_xref="taxon:287"
/clone="pass2-164_8171"
/clone="pass2-164_8171"
/note="clinical isolate 2-164 Whole genomic shotgun
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Whole-Genome-Sequence variation among multiple isolates of
                                                                                                                                                                                                            ô
                                                                                                                                                                              Length 1445;
                                                                                                                                                                                                          Indels
                                                                                                                                                                             Query Match 41.4%; Score 600; DB 29; 1
Best Local Similarity 100.0%; Pred. No. 9.3e-289;
Matches 600; Conservative 0; Mismatches 0;
                                                                                                                                   ų
                                                                                                                                   293
                                                                                                                                      þ
                                                                                                                                   412
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Pseudomonas aeruginosa
Pseudomonas aeruginosa
                                                                                                                                      U
                                                                                                                     11brary.'
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             GSS
                                                                                                                                                                                                                                        488
                                                                                                                                                                                                                                                                                               548
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1028
                                                                                                                                                                                                                                                                                                                                                         809
                                                                                                                                                                                                                                                                                                                                                                                      556
                                                                                                                                                                                                                                                                                                                                                                                                                    899
                                                                                                                                                                                                                                                                                                                                                                                                                                                 496
                                                                                                                                                                                                                                                                                                                                                                                                                                                                              728
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         436
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              316
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            908
```

788

ö

Gaps

ö

438

498 465 405 618 345 678 285 738 225 798

858

RESULT 2 BZ579116/c DEFINITION ORGANISM

ACCESSION VERSION KEYWORDS SOURCE REFERENCE AUTHORS

TITLE

```
Tel: 2062216954
Fax: 2066857244
Email: craymond@u.washington.edu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Homo sapiens (human)
Homo sapiens
                                                                                                                                                                                                          library."
349 c
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      1, .1754
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           mRNA sequence.
                                                                                                                                                                                                                                                                                                                                                                                                1438 CCGGC 1442
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Unpublished
                                                                                                                                                                                                                                                                                                                                                                                                                              368 CCGGC 364
                                                                                                                                                                                                                         233
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          BE966412
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       516
                                                                                  source
                                                                                                                                                                                                                                                                                                                                                                                                                                                                              RESULT 5
BE966412/c
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            DEFINITION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ORGANISM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     BASE COUNT
                                                                                                                                                                                                                         BASE COUNT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     REFERENCE
AUTHORS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 JOURNAL
COMMENT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ACCESSION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          VERSION
KEYWORDS
SOURCE
                                                                  FEATURES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            FEATURES
                                                                                                                                                                                                                                          ORIGIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ORIGIN
                                                                                                                                                                                                                                                                                                                                                                 g
                                                                                                                                                                                                                                                                                                                                                                                                                               g
                                                                                                                                                                                                                                                                                                                                                                                                  ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ô
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      976 GCTGCCAGTGGGTACGCGAGCGCAGGGCGTGAGCTACTACGACGATTCCAAGGCCACCA 1035
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                GSS 17-DEC-2002
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Pseudomonas aeruginosa
Bacteria; Proteobacteria; Gammaproteobacteria; Pseudomonadales;
Pseudomonadaceae; Pseudomonas.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Spencer, D. H., Raymond, C. K., Smith, E. E., Sims, E. E., Hastings, M., Burns, J. L., Kaul, R. and Olsen, M.V.
Whole-Genome-Sequence variation among multiple isolates of Psedomonas aeruginosa library
J. Bacteriol., (2002) In press
Contact: Chris K. Raymond
                                                                             Bacteria; Proteobacteria; Gammaproteobacteria; Pseudomonadales;
Pseudomonadaceae; Pseudomonas.
1 (bases 1 to 1171)
                                                                                                                      Spencer, D. H., Raymond, C.K., Smith, E.E., Sims, E.E., Hastings, M., Burns, J.L., Kaul, R. and Olsen, M.V.
Whole-Genome-Sequence variation among multiple isolates of Psedomonas acruginosa library
J. Bacteriol., (2002) In press
Contact: Chris K. Raymond
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          BZ550283 1194 bp DNA linear GSS 17-DEC-pacs1-60_2584.x1 pacs1-60_Pseudomonas aeruginosa genomic clone pacs1-60_2584, genomic survey sequence.
BZ550283 GI:27153864
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Gaps
                                                                                                                                                                                                                                                                                                                                                                                                            /db_xref="taxon:287"
/clone="pacs2-164_1863"
/clone=ll="pacs2-164"
/note="clinical isolate 2-164 Whole genomic shotgun
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Length 1171;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            1 others
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        0; Indels
                                                                                                                                                                                                                                                                                                                                                                    aeruginosa"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       8.6%; Score 125; DB 29;
100.0%; Pred. No. 3.8e-51;
tive 0; Mismatches 0;
                                                                                                                                                                                                                    Genome Center University of Washington
Box 352145, Seattle, WA 98105-2145, USA
Tel: 2062216954
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    University of Washington
Box 352145, Seattle, WA 98105-2145, USA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            298 t
                                                                                                                                                                                                                                                                                   Fax: 2066857244
Email: craymond@u.washington.edu
Class: shotgun.
                                                                                                                                                                                                                                                                                                                                                             /organism="Pseudomonas /mol_type="genomic DNA"/strain="2-164"
                                                                                                                                                                                                                                                                                                                                   Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           329 g
BZ559806
BZ559806.1 GI:27176698
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Pseudomonas aeruginosa
                                               Pseudomonas aeruginosa
Pseudomonas aeruginosa
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            325 c
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Best Local Similarity 100.
Matches 125; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                              library."
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Genome Center
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                1096 TGCTG 1100
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              268 TGCTG 272
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            218
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           BASE COUNT
ORIGIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              BZ550283/c
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          DEFINITION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ACCESSION
VERSION
KEYWORDS
SOURCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ORGANISM
                                                              ORGANISM
                                                                                                                                                                                     JOURNAL
COMMENT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    JOURNAL
 ACCESSION
                                                                                                            REFERENCE
                                                                                                                             AUTHORS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        REFERENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       AUTHORS
                VERSION
KEYWORDS
SOURCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              RESULT 4
                                                                                                                                                                                                                                                                                                                                     FEATURES
                                                                                                                                                         TITLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      TITLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            g
```

```
/organism="Homo sapiens"
/organism="Homo sapiens"
/mol_type="mRNA"
/db xref="taxon:9606"
/clone="InAGE:3905969"
/tissue_type="leJomyosarcoma"
/lab_host="DH10B (phage-resistant)"
/clone_lib="NIH_MGC_71"
/cote="Organ: uterus; Vector: pCMV-SPORT6; Site_1: NotI;
/cote="Tomogram: vector: pCMV-SPORT6; Site_1: Site_2: Sal1; Cloned unidirectionally. Primer: Oligo dT.
Average insert size 2.1 kb.

a 611 c 468 g 159 t
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           BE966412 14-DEC-2000 601660465R1 NIH_MGC_71 Homo sapiens cDNA clone IMAGE:3905969 3',
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1378 CCGTAGAGGAGCTAGCGTGATGCTGTGGGTGTTGCGCCCCTTCCCGTCGCCGCTGTTGAG 1437
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostoml; Mammalia; Eutheria; Primates; Catarrhini; Hominidae; Homo. 1 (bases 1 to 1754)
NIH-MGC http://mgc.nci.nih.gov/.
National Institutes of Health, Mammalian Gene Collection (MGC)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               CDNA Library Preparation: Life Technologies, Inc.
CDNA Library Preparation: Life Technologies, Inc.
CDNA Library Arrayed by: The I.M.A.G.E. Consortium (LLNL)
DNA Sequencing by: Incyte Genomics, Inc.
Clone distribution: MGC clone distribution information can be
found through the I.M.A.G.E. Consortium/LLNL at:
http://image.llnl.gov
Plate: LLCM701 row: b column: 18
High quality sequence stop: 55.
Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Gaps
                                                                                                                                    // Organism="Pseudomonas aeruginosa"
// Arganism="Pseudomonas aeruginosa"
// Astrain="1-60"
// Ab_xref="taxon:287"
// Clone="pacs1-60"
// Astrain="1-60"
// 
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  On Oct 3, 2000 this sequence version replaced gi:10577117. Contact: Robert Strausberg, Ph.D. Email: cgapbs-rémail.nih.gov
Tissue Procurement: ATC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     .;
0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Length 1194;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     0; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Query Match 4.5%; Score 65; DB 29; Best Local Similarity 100.0%; Pred. No. 4e-21; Matches 65; Conservative 0; Mismatches 0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   314 t
Class: shotgun.
Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             298 g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    BE966412.2 GI:11771801
```

ò 셤

us-09-701-229-1.olig.rst

```
1. 687

/organism="Triticum aestivum"
/mol_type="mANA"
/cultivar="Sumai3"
/du_txref="taxon:4565"
/clone="Estaxon:4565"
/clone="Estaxon:4565"
/tissue_type="Spike"
/dev_stage="Adult plant"
/lab_host="E. coli JM109"
/clone_lib="KSU wheat Fusarium graminearum infected spike
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  /note-"Vector: pGEM-T easy; Site_1: SacII; Site_2: SpeI; Plants were grown in the greenhouse. Spikes were sprayed with Fusarium graminearum (at what stage). Total RNA, and poly(A) RNA were prepared from infected spikes. CDNA was prepared using the SmarrTW PCR CDNA synthesis kit from Clonetech. CDNA was cloned into the pGEM-T easy vector
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Eukaryotta: Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Cetartiodactyla; Ruminantia; Pecora; Bovoidea; Bovoidae; Bovoinae; Bos.

1 (bases 1 to 265)

da Mota,A.F., Sonstegard,T.S., Van Tassell,C.P., Matukumalli,L.K., Wood,D.L., Capuco,A.V., Britc,M.A.P., Martinez,M.L., Connor,E.E., Machado,M.A. and Coutinho,L.L.
Construction and Characterization of cDNA Libraries Generated from Mammary Gland Tissues of Holstein (Bos taurus) and Gir (Bos indicus
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                CB061196 265 bp' mRNA linear EST 17-JAN-2003 4011803 BARC-EMBRAPA 338BOV Bos indicus cDNA clone 338BOV_LC19
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Single pass sequencing. Bases called and trimmed with phred 0.000925 using options -trim_alt '' -trim_fasta. Vector identified by cross_match using options -minmatch 12 -minscore 12
Contact: John Fellers
US Department of Agriculture, Agriculture Research Service, Plant
Science and Entomology Unit
Dept. of Plant Pathology, 4006 Throckmorton Hall, Kansas State
University, Manhattan, KS 66506, USA
Tel: 785-532-2367
Fax: 785-532-6167
Email: jpf@alfalfa.ksu.edu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Gaps
                                                                                                                                                                                            Sequence have been trimmed to remove vector sequence and low quality sequence with phred score less than 20 Seq primer: T7.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Score 22; DB 10; Length 687;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Contact: Adilson F. da Mota
Gene Evaluation and Mapping Laboratory
USDA, ARS, Animal and Natural Resources Institute
Bldg. 200 Rm3 BARC-East, Beltsville, MD 20705, USA
Tal: 3015048456
Fax: 3015048414
Email: amota@cnpgl.embrapa.br
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     0; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    117 t
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Query Match 1.5%; Score 22; DB Best Local Similarity 100.0%; Pred. No. 11; Matches 22; Conservative 0; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1274 CGCCGAGCTGGCCCGCGAAGGC 1295
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  182 g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               CGCCGAGCTGGCCCGCGAAGGC 407
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Unknown, mRNA sequence.
CB061196
CB061196.1 GI:27799483
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              from Promega.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    246 c
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Bos indicus (zebu)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Bos indicus
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Unpublished
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      140
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Cattl
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             428
                                                                                                                                                                                                                                                                                              source
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          VERSION
KEYWORDS
SOURCE .
ORGANISM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    BASE COUNT
ORIGIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    RESULT 8
CB061196/c
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      DEFINITION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ACCESSION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           JOURNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         REFERENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  AUTHORS
                                                                                                                                                                                                                                                                     FEATURES
       COMMENT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      TITLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   COMMENT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             g
                                                                                                                                                                                                                                                                                                                                                                                                     Triticum aestivum (bread wheat)
Triticum aestivum
Eukaryota, Viidiplantae, Streptophyta; Embryophyta; Tracheophyta;
Spermatophyta; Magnollophyta; Liliopsida; Poales; Poaceae; Pooldeae
; Triticeae; Triticum.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Triticum aestivum
Eukaryota; Viridiplantae; Streptophyta; Embryophyta; Tracheophyta;
Sperimatophyta; Magnollophyta; Liliopsida; Poales; Poaceae; Pooldeae
: Triticeae; Triticum.
: (bases 1 to 687)
Fellers,J.P., Li,W.L., Hill-Ambroz,K., Matthews,A. and Gill,B.S.
The structure and function of the expressed portion of the wheat genomes - Kansas State Unversity. Fusarium graminearum infected Unpublished
                                                                                                                                                                                                                                                                   AL025430 537 Triticum aestivum cDNA clone B08_p335_plate_15, mRNA
                                                     ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         EST 17-AUG-2000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Wilson, I., Beswick, R., Shepherd, S., Barker, G., Parker, J., Owen, Edwards, D., Coghill, J., Holdsworth, M., Lenton, J., Shewry, P. and
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      EST7-4-5_C02_7elt7_006 KSU wheat Fusarium graminearum infected spike cDNA library Triticum aestivum cDNA clone EST7-4-5_C02_7elt7_006, mRNA sequence.
BE586183
BE586183.1 GI:9839203
                                                        Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       BBSRC-funded wheat EST resource for the academic community
                                                     ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ö
  1.6%; Score 23; DB 10; Length 1754;
100.0%; Pred. No. 4.6;
tive 0; Mismatches 0; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             DB 9; Length 537; 9.9;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                //wol_type="mRNA"
/wol_type="mRNA"
/wol_tivar="mercia"
/db_xref="taxon.f455"
/clone="m08_p335_plate_15"
/tissue_type="salt stressed seedlings"
/dev_stage="21 days old"
/dev_lb="p:335"
/ a 216 c 147 g 87 t 1 others
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Contact: Barker G
Institute of Arable Crop Research
Long Ashton, Bristol BS41 9AF United Kingdom.
Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      /organism="Triticum aestivum"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Query Match 1.5%; Score 22; DB Best Local Similarity 100.0%; Pred. No. 9.9 Matches 22; Conservative 0; Mismatches
                                                                                                                                                                                                                                                                537 bp
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Triticum aestivum (bread wheat)
                                                                                                 884 cacacracacacacacacaca 906
                                                                                                                          1274 CGCCGAGCTGGCCCGCGAAGGC 1295
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                117 CGCCGAGCTGGCCCGCGAAGGC 96
                                                                                                                                                                                                                                                                                                                                     AL825430
AL825430.1 GI:21836951
                                                   Conservative
                          Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Unpublished
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Edwards, K.
  Query Match
Best Local Simi
Matches 23;
                                                                                                                                                                                                                                                                                      DEFINITION
                                                                                                                                                                                                                                        AL825430/c
                                                                                                                                                                                                                                                                                                                                                                                                                                  ORGANISM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         BASE COUNT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            BE586183/c
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        DEFINITION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ORGANISM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     TITLE
JOURNAL
COMMENT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ACCESSION
VERSION
KEYWORDS
SOURCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      REFERENCE
AUTHORS
TITLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          REFERENCE
AUTHORS
                                                                                                                                                                                                                                                                                                                                     ACCESSION
                                                                                                                                                                                                                                                                                                                                                           VERSION
KEYWORDS
SOURCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         JOURNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        FEATURES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ORIGIN
```

ò g

ö

ö

Gaps ; 0

```
NL_4_N22 Drought stress (leaf) Oryza sativa (indica cultivar-group) CDNA clone NL_4_N22 3', mRNA sequence.
B1306480
B1306480.1 G1:14981802
EST.
Equal amounts of plasmid DNA from three normalized libraries (fetal lung NbH119W, testis NHT, and B-cell NCI_CGAP_CGB1) were mixed, and ss circles were made in vitro. Following HAP purification, this DNA was used as vitracer in a subtractive hybridization reaction. The driver was PCR-amplified CDNAAs from pools of 5,000 clones made from the same 3 libraries. The pools consisted of 1.M.A.G.E. clones 297480-030287, 682632-687239, 526408-728711, and 72906-731399, subtraction by Bento Soares and M. Fatima Bonaldo.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   1. .501.

Aoganism="Oryza sativa (indica cultivar-group)"

Anol_type="mRNA"

Acultivar="Nagina 22 (indica sub sp)"

Adb_xref="taxon:39946"

Aclone="NL4_N2"

Atissue_type="Entire leaf tissue"

Adev_stage="35 day-old seedlings"

Acolne_lib="Drought stress (leaf)

Anote="Organ: Leaf; Vector: TyT3Pac; ESTs from normalized

leaf_cDNA Library from drought stressed seedlings "
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Oryza sativa (indica cultivar-group)
Oryza sativa (indica cultivar-group)
Eukaryota; Viridiplantae; Streptophyta; Embryophyta; Tracheophyta;
Spermatophyta; Magnoliophyta; Liliopsida; Poales; Poaceae;
Ehrhattoldeae; Oryzeae; Oryza.

1 (bases 1 to 501)
Reddy.A.R., Ramakrishna,W., Chandrasekhar,A., Nagabhushan,I.,
Ravindrababu,P. and Bennetzen,J.L.
Novel EST enrichment with normalized cDNA libraries from drought
stressed rice (Oryza sativa L.cv Nagina 22)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           P.O. Central University, Hyderabad-500 046, A.P. India Tel: 0091-40-3010265 Fax: 0091-40-301045 Email: arjuls1@uohyd.ernet.in Insert Lengh: 501 Std Error: 0.00 Plate: 4 row: N column: 22
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Contact: Reddy AR
Department of Plant Sciences, School of Life Sciences
University of Hyderabad
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           DB 12; Length 501;
31;
                                                                                                                                                                                                                                                                                                   DB 9; Length 369; 28;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         1 others
                                                                                                                                                                                                                                                                                                                                                         Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Indels
                                                                                                                                                                                                                                                                                                                                                         ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         1.4%; Score 21; DB ilarity 100.0%; Pred. No. 31; Conservative 0; Mismatches
                                                                                                                                                                                                                                                                                                           1.4%; Score 21; DB 100.0%; Pred. No. 28; ive 0; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Seq primer: GTAAAACGACGGCCAGTG.
                                                                                                                                                                                                                                                                                                                                                                                                     1268 GCAGGCCGCCGAGCTGGCCCG 1288
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        1050 CTGGCGGCGATCGAGGGGCTG 1070
                                                                                                                                                                                                                                      107 g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         226 g
                                                                                                                                                                                                                                                                                                                                                                                                                                124 GCAGGCCGCGAGCTGGCCCG 144
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       415 CTGGCGGCGATCGAGGGGCTG 395
                                                                                                                                                                                                                                                                                                           Query Match 1.4;
Best Local Similarity 100.
Matches 21; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Local Similarity
hes 21; Conserv
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Unpublished
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            source
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         RESULT 10
BI306480/c
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           DEFINITION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              SOURCE
ORGANISM
                                                                                                                                                                                                                                        BASE COUNT
ORIGIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       BASE COUNT
ORIGIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ACCESSION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     JOURNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    REFERENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          AUTHORS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           KEYWORDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    FEATURES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  VERSION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         TITLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             COMMENT
                                                                                                                                                                                                                                                                                                                                                                                                          ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                  qq
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  q
                                                                                                                                                                                                                                                                                                                                                                                                                    /clone_lib="BARC-EMBRAPA 338BOV"
//clone_lib="BARC-EMBRAPA 338BOV"
//note="Organ: mammary; Vector: pUC 118; Site_1: HincII;
Site_2: HincII; This mammary-derived cDNA library was
created as part of a collaborative project between the ARS
Gene Evaluation and Mapping Laboratory and the EMBRAPA
Dairy Cattle Research Center under the sponsorship of USDA
, ARS/EMBRAPA-LABEX program in animal genomics. RNA
antracted on 6/8/02, RT with Superscript II at 37 deg C
annealing temperature. Cow AMI."
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ;
0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             EST 07-JUL-1998
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            /clonello="Soares_NFL_T_GBC_SI"
//note="Organ pooled; Vector: pT7T3D-Pac (Pharmacia) with a modified polylinker; Site_1: Not I; Site_2: Eco RI;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
Mammalia; Eutheria; Primates; Catarrhini; Hominidae; Homo.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          1 (bases 1 to 369)
NCI-CGAP http://www.ncbi.nlm.nih.gov/ncicgap.
National Cancer Institute, Cancer Genome Anatomy Project (CGAP),
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Email: cgapbs-remail.nih.gov
This clone is available royalty-free through LLNL; contact the IMAGE Consortium (info@image.llnl.gov) for further information. Insert Length: 630 Seq primer: -40ml3 fwd. ET from Amersham High quality sequence stop: 334.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           op43e08.sl Soares_NFL_T_GBC_Sl pp mRNA linear ES1 op43e08.sl Soares_NFL_T_GBC_Sl Homo sapiens cDNA clone INAGE:1579622 3', mRNA sequence.
AA969049.1 GI:3144229
EST.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Query Match 1.4%; Score 21; DB 14; Length 265; Best Local Similarity 100.0%; Pred. No. 25; Matches 21; Conservative 0; Mismatches 0; Indels
                                                                                                                                                                                                                                                                                                                       /tissue_type="teat cistern and alveoli"
/cell_type="multiple"
/dev_stage="involuted"
/lab_host="K-12"
                                                                                                                                                                                   /organism="Bos indicus"
/mol_type="mRNA"
/strain="Brazilian Dairy Gir"
/db_xref="taxon:9915"
/clone="338BOV_1C19"
/sex="female"
                   FORWARD: GTTTTCCAGTCACGACGTG
BACKWARD: TGAGCGGATAACAATTCACACAG
Blate: 1 row: C column: 19
Seq primer: GTTTTCCAGTCAGACGTG
High quality sequence stop: 265.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              /organism="Homo sapiens"
/mol_type="mRNN"
/db_xref="taxon:9606"
/clone="TMAGE:1579622"
/lab_host="DH108"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Tumor Gene Index
Unpublished
Contact: Robert Strausberg, Ph.D.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  900 GCGCTGGGCCATGCGGTCGGC 920
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Homo sapiens (human)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          1. .369
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Homo sapiens
    PCR PRimers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       52
                                                                                                                                                                    source
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               source
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               SOURCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     BASE COUNT
ORIGIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              DEFINITION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               REFERENCE
AUTHORS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ACCESSION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          JOURNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          RESULT 9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   VERSION
KEYWORDS
                                                                                                                                           FEATURES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    FEATURES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              TITLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  COMMENT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ö
```

ö

Gaps

ö

```
71 9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     1268 GCAGGCCGCCGAGCTGGCCC 1287
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       147 GCAGGCGCCGAGCTGGCCC 166
                                                                                                                                                                          /lab_host="DH10B"
                                                                                                                                                                                                                                                                                                                                                                  Fatima Bonaldo
                                                                                                                                                                                                                                                                                                                                                                                                                           Ouery Match
Best Local Similarity 100.0
Matches 20; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Bos indicus (zebu)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Unpublished
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Bos indicus
                                                                                           source
                                                                                                                                                                                                                                                                                                                                                                                BASE COUNT
ORIGIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          DEFINITION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ORGANISM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       RESULT 13
CB042199
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ACCESSION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          VERSION
KEYWORDS
SOURCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   REFERENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   AUTHORS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        JOURNAL
                                                                       FEATURES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     TITLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          COMMENT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       g
          792 bp mRNA linear EST 07-JUN-2000 OF16F05 OF Oryza sativa cDNA 5' similar to histone-like dna-binding BE041029
                                                                                                                                                                     Eukaryota; Viridiplantae; Streptophyta; Embryophyta; Tracheophyta; Spermatophyta; Magnollophyta; Liliopsida; Poales; Poaceae; Enthartoideae; Oryzaa.

Enthartoideae; Oryzaa.

I (bases 1 to 792)

Bohnert, H.J., Borchert, C., Brazille, S., Brooks, J., Eaton, M., Ferrea, H., Kawasaki, S., McCollough, A., Michalowski, C.B., Palacio, C., Scara, G., Wheeler, M. and Zepeda, G.R.

Unpublished
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ô
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                AW771204 286 bp mRNA linear EST 04-MAY-2000
hn60b06.x1 NCI_CGAP_Kidll Homo sapiens cDNA clone IMAGE:3032243 3',
mRNA sequence.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Primates; Catarrhini; Hominidae; Homo. 1 (bases 1 to 286)
NCI-CAAP http://www.ncbi.nlm.nih.gov/ncicgap.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Contact: Robert Strausberg, Ph.D.
Email: cgapbs-r@mail.nih.gov
Email: cgapbs-r@mail.nih.gov
Email: cyapbs-r@mail.nih.gov
Emmert-Buck, M.D., Ph.D.
CDNA Library Preparation: M. Bento Soares, Ph.D.
CDNA Library Arrayed by: Greg Lennon, Ph.D.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          DB 10; Length 792;
36;
                                                                                                                                                                                                                                                                                                                                          University of Arizona
Bio Sciences West room 513, Tucson, AZ 85721, USA
TP1: 520-621-7982
Fax: 520-621-1697
Email: cbm@u.arizona.edu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ;
0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                /db_xxef-"taxon:4530"
/tissue_type-"entire plant"
/dev_stage="z weeks"
/clone_lib="0p"
/note="l week 150mM NaCl"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          345 t
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        1.4%; Score 21; DB
ilarity 100.0%; Pred. No. 36;
Conservative 0; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                 1. .792
/organism-"Oryza sativa"
/mol_type-"mRNA"
                                                                                                                                                                                                                                                                                                                                                                                                                         An open reading frame exists.
Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           1050 CTGGCGGCGATCGAGGGGCTG 1070
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      181 g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   /strain="Pokkali"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                54 CTGGCGCGATCGAGGGGCTG 74
                                                                                                                                                                                                                                                                                                                              Contact: Michalowski, C.B.
                                                                                                  BE041029.1 GI:8336700
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  AW771204.1 GI:7703257
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Homo sapiens (human)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          189 c
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Tumor Gene Index
Unpublished
                                                                                                                                        Oryza sativa
Oryza sativa
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Homo saplens
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Best_Local Similarity
Matches 21; Conserv
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        EST.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                    source
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                VERSION
KEYWORDS
SOURCE
ORGANISM
                                                  DEFINITION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                DEFINITION
                                                                                                                                                      ORGANISM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      BASE COUNT
ORIGIN
                                                                                                                                                                                                                                                                                          TITLE
JOURNAL
COMMENT
RESULT 11
BE041029
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         AUTHORS
TITLE
                                                                                    ACCESSION
                                                                                                    VERSION
KEYWORDS
SOURCE
                                                                                                                                                                                                                                           AUTHORS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ACCESSION
                                                                                                                                                                                                                         REFERENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               RESULT 12
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         REFERENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           JOURNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                  FEATURES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                AW771204
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             COMMENT
```

à g

```
/tablose_lib="NoT_CGAP_Kid11"
//clone_lib="NoT_CGAP_Kid11"
//clone_lib="NoT_CGAP_Kid11"
//clone_lib="NoT_CGAP_Kid11"
//clone_lib="NoT_CGAP_Kid14"
//clone_lib="No
DNA Sequencing by: Washington University Genome Sequencing Center Clone distribution: NCI-CGAP clone distribution information can be found through the I.M.A.G.E. Consortium/LLNL, send email to: infodimage.llnl.gov Seq primer: -40UP from Gibco High quality sequence stop: 268.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            CB042199 289 bp mRNA linear EST 15-JAN-2003 4007144 BARC-EMBRAPA 316BOV Bos indicus cDNA clone 316BOV_1G12 Unknown, mRNA sequence.
CB042199.1 GI:27761444
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Eukaryotta; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Cetartiodactyla; Ruminantia; Pecora; Bovoldea; Bovoldea; Bovolae; Doses 1 to 289)
da Mota,A.F., Sonstegard,F.S., Van Tassell,C.P., Matukumalli,L.K., Wood,D.L., Capuco,A.V., Brito,M.A.P., Martinez,M.L., Connor,E.E., Machado,M.A. and Coutlnho,L.L.
Construction and Characterization of cDNA Libraries Generated from Mammary Gland Tissues of Holstein (Bos taurus) and Gir (Bos indicus
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Single pass sequencing. Bases called and trimmed with phred 0000925 using options -trim_alt '' -trim_fasta. Vector identified by cross_match using options -minmatch 12 -minscore 18 PCR PRIMETS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Length 286;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Contact: Adilson F. da Mota
Gene Evaluation and Mapping Laboratory
USDA, ARS, Animal and Natural Resources Institute
Bidg. 200 Rm3 BARC-East, Beltsville, MD 20705, USA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   0; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 83 t
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     FORWARD: GTTTTCCCAGTCACGACGTTG
BACKWARD: TGAGCGGATAACAATTTCACACAG
Plate: 1 row: G column: 12
                                                                                                                                                                                                                                                                                                                                                                                                                                                           /organism="Homo sapiens"
/mol_type="mRNA"
/db_xref="taxon:9606"
/clone="IMAGE:3032243"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Seq primer: GTTTTCCCAGTCACGACGTTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        High quality sequence stop: 289.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Tel: 3015040456
Fax: 3015040414
Email: amota@cnpgl.embrapa.br
```

ö

```
/Mo_Lype="NRNA"
//wol-Type="NRNA"
//db_xref="taxon:9606"
//lab_bost="blid10B (Life Technologies)"
//lab_bost="blid10B (Life Technologies) with a modified
polylinker; Site_1: Not I; Site_2: ECO RI; The
NCI_CGAP_Bub1 library is a subtracted library
derived from B1. B1 constitutes a mixture of 21
normalized or subtracted NCI_CGAP_Loso,
//CGAP_Prozo, NCI_CGAP_Loso, NCI_CGAP_Loso,
//CGAP_Prozo, NCI_CGAP_Kid5, NCI_CGAP_Loso,
//CCAP_Brozo, NCI_CGAP_Loso, NCI_CGAP_Loso,
//CCAP_Brozo, NCI_CGAP_ECO, NCI_CGAP_Loso,
//CCAP_Brozo, NCI_CGAP_Loso, NCI_CGAP_Loso,
//CCAP_Brozo, NCI_CGAP_Loso, NCI_CGAP_Loso,
//CCAP_Brozo, NCI_CGAP_Roso, NCI_CGAP_Loso,
//CCAP_Brozo, NCI_CGAP_Roso, NCI_CGAP_Loso,
//CCAP_Loso, NCI_CGAP_Roso, NCI_CGAP_Roso,
//CCAP_Loso, NCI_CGAP_Roso, NCI_CGAP_Roso,
//CCAP_Loso, NCI_CGAP_Roso, NCI_CGAP_Roso,
//CCAP_Loso, NCI_CGAP_Roso,
//CCAP_Loso, NCI_CGAP_Roso,
//CCAP_Loso, NCI_CGAP_Roso,
//CCAP_Loso, NCI_CGAP_Roso,
//CCAP_Loso, NCI_CGAP_Roso,
//CCAP_Loso, NCI_CGAP_Roso,
//CCAP_Loso,
//CCAP_Roso,
//CCAP_Ros
                                                                                                                                                                                                                                                                                                                                                                                                         EST 30-0CT-1999
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Email: cgapbs-remail.nih.gov
Oligo-dr track not found, Not site shown in beginning of sequence
is likely internal to the message. cDNA Library Preparation: M.B.
Soares Lab Clone distribution: NCI-CGAP clone distribution
information can be found through the I.M.A.G.E. Consortium/LLNL at:
Www-bio.llnl.gov/bbrp/lmage/image.html
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Bummalla; Eutheria; Primates; Catarrhini; Hominidae; Homo.
1 (bases 1 to 318)
NCI-CGAP http://www.ncbi.nlm.nih.gov/ncicgap.
NCI-CGAP http://www.ncbi.nlm.nih.gov/ncicgap.
Tumor Gene Index
Umpublished
                                                                                                                                                                                                                                                                                                                                                                                          AW139275
UI-H-BII-aeg-g-12-0-UI.sl NCI_CCAP_Sub3 Homo sapiens CDNA clone IMAGE:2719318 3', mRNA sequence.
                                                                                                                                                  Gaps
                                                                                                                                               ö
                                                                                      Length 301;
                                                                                                                                               0; Indels
                                                                                      10;
     80 t
                                                                                   DB :
                                                                                   Score 20; DB 1
Pred. No. 82;
0; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Contact: Robert Strausberg, Ph.D.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              /organism="Homo sapiens"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Location/Qualifiers
                                                                                                                                                                                                    1305 CTGTTGTCGCCGGCCTGCGC 1324
                                                                 1.4%; Sc.
100.0%; Pre
0;
     83
                                                                                                                                                                                                                                     37 CTGTTGTCGCCGGCCTGCGC 18
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         /mol_type="mRNA"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          AW139275.1 GI:6143993
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Homo sapiens (human)
     υ
                                                                                                                                               20; Conservative
     62
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Homo sapiens
                                                                                      Query Match
Best Local Similarity
     76 a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                POLYA-No.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   AW139275
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         source
  BASE COUNT
ORIGIN
                                                                                                                                                                                                                                                                                                                                                                                                                                    DEFINITION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ORGANISM
                                                                                                                                                                                                                                                                                                                                                      RESULT 15
AW139275
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 REFERENCE
AUTHORS
                                                                                                                                               Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ACCESSION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       VERSION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                JOURNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           FEATURES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          TITLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 COMMENT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   SOURCE
                                                                                                                                                                                                       ò
                                                                                                                                                                                                                                                                a
                                                                                                                                                                                                                                                                                                                                          /clone_lib="BaRc-EMBRaPA 316BOV"
//clone_lib="BaRc-EMBRaPA 316BOV"
//clone_lorgan: mammary; Vector: pUC19; Site_l: Smal;
//orce="Organ: mammary; Vector: pUC19; Site_l: Smal;
//orce="Organ: mammary-declived cDNA library was
created as part of a collaborative project between the ARS
created as part of a collaborative project between the ARS
Dairy Cattle Research Center under the sponsorship of USDA
/ ARS/EMBRAPA-LABEX program in animal genomics. RNA
annealing temperature, PCR with lômer AMS."
a 100 c

87 95 55 t
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                1. .301

| / Organism="Sorghum bicolor"
| / Organism="Sorghum bicolor"
| / Aml_Lyppe="mRNA" |
| / Ab_xref="taxon:4558" |
| / Clone_lib="Covary 2 (OV2)" |
| / Anote="Organ: Mix of ovaries of varying immature stages from 8-week-old plants; Vector: pBluescript II from Lambda Zap II; Site_l: XhoI; Site_2: EcoRI; The library was made from poly-A RNA in the cloning vector lambda ZAP II.

Clones to be sequenced were prepared by mass excision."
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     EST 20-DEC-2000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Eukaryota; Viridiplantae; Streptophyta; Embryophyta; Tracheophyta;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Cordonnier-Pratt, M.-M., Gingle, A., Marsala, C., Sudman, M. and Pratt
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Spermatophyta; Magnollophyta; Liliopsida; Poales; Poaceae; PACCAD clade; Panicoideae; Andropogoneae; Sorghum.
1 (bases 1 to 301)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     An EST database from Sorghum: ovaries of varying immature stages
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Contact: Cordonnier-Pratt MM
Laboratory for Genomics and Bioinformatics
The University of Georgia, Department of Plant Biology
Plant Sciences Building, Rm. 2502, Athens, GA 30602-7271, USA
Far: 706 583 0210
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             BF657011 301 bp mRNA linear EST 20-1
OV2_18_A07.gl_A002 Ovary 2 (OV2) Sorghum bicolor cDNA, mRNA
sequence.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              DB 14; Length 289;
81;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          0; Indels
                                                                                                              /strain="Brazilian Dairy Gir"
/db_xref="taxon:9915"
/clone="316BOV_1G12"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Query Match 1.4%; Score 20; DB Best Local Similarity 100.0%; Pred. No. 81; Matches 20; Conservative 0; Mismatches
                                                                                                                                                                                                                            /tissue_type="mammary"
/cell_type="epithelium"
/dev_stage="involuted"
/lab_host="R-12"
                                                           /organism="Bos indicus"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Email: mmprattedga.edu
Seq primer: T7
High quality sequence start: 6
High quality sequence stop: 222
POLYA-Yes.
Jocation/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             901 CGCTGGGCCATGCGGTCGGC 920
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           1 CGCTGGGCCATGCGGTCGGC 20
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Sorghum bicolor (sorghum)
Sorghum bicolor
                                                                                /mol_type="mRNA"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                BF657011.1 GI:11922145
                                                                                                                                                                                                    /sex="female"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Unpublished
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              47
                                source
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            source
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   RESULT 14
BF657011/c
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        BASE COUNT
ORIGIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         DEFINITION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ORGANISM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          JOURNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ACCESSION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             VERSION
KEYWORDS
SOURCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                AUTHORS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  REFERENCE
  FEATURES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              FEATURES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     TITLE
```

à 셤

Search completed: August 14, 2003, 07:04:13 Job time: 2903 secs

us-09-701-229-1.olig.rng

GenCore version 5.1.6 Copyright (c) 1993 - 2003 Compugen Ltd.

OM nucleic - nucleic search, using sw model

August 14, 2003, 01:55:34 ; Search time 422 Seconds (without alignments) 9275.320 Million cell updates/sec Run on:

Title: Perfect score: Sequence:

OLIGO\_NUC Gapop 60.0 , Gapext 60.0 Scoring table:

2552756 segs, 1349719017 residues Searched:

Word size :

5105512 Total number of hits satisfying chosen parameters:

Minimum DB seq length: 0 Maximum DB seq length: 200000000

Post-processing: Listing first 45 summaries

Databa

case:	N_Geneseq_19Jun03:*
	1: /SIDS1/gcgdata/geneseq/geneseqn-emb1/NA1980.DAT::
	2: /SIDS1/gcgdata/geneseq/genesegn-embl/NA1981.DAT::
	3: /SIDS1/gcgdata/geneseq/geneseqn-emb1/NA1982.DAT:
	4: /SIDS1/gcgdata/geneseq/genesegn-emb1/NA1983.DAT:
	5: /SIDS1/gcgdata/geneseq/genesegn-embl/NA1984.DAT:
	6: /SIDS1/gcgdata/geneseq/genesegn-emb1/NA1985.DAT:
	7: /SIDS1/gcgdata/geneseq/geneseqn-emb1/NA1986.DAT:
	8: /SIDS1/gcgdata/geneseg/genesegn-embl/NA1987.DAT:
	9: /SIDS1/gcgdata/geneseg/genesegn-embl/NA1988.DAT:
	10: /SIDS1/gcgdata/geneseq/genesegn-embl/NA1989.DAT
	11: /SIDS1/gcgdata/geneseq/genesegn-embl/NA1990.DAT
	12: /SIDS1/gcgdata/geneseq/geneseqn-embl/NA1991.DAT

/gcgdata/geneseq/geneseqn-embl/NA1994 /SIDS1

/SIDS1/gcgdata/geneseqn-emb1/NA1996.DAT:
/SIDS1/gcgdata/geneseqn-emb1/NA1996.DAT:
/SIDS1/gcgdata/geneseqy-emeseqn-emb1/NA1997.DAT:
/SIDS1/gcgdata/geneseqy-emeseqn-emb1/NA1999.DAT:
/SIDS1/gcgdata/geneseqy-emeseqn-emb1/NA1999.DAT:
/SIDS1/gcgdata/geneseqy/geneseqn-emb1/NA2000.DAT:
/SIDS1/gcgdata/geneseqy/geneseqn-emb1/NA2001b.DAT:
/SIDS1/gcgdata/geneseqy/geneseqn-emb1/NA2001b.DAT:
/SIDS1/gcgdata/geneseqy/geneseqn-emb1/NA2001b.DAT:
/SIDS1/gcgdata/geneseqy/geneseqn-emb1/NA2001b.DAT:
/SIDS1/gcgdata/geneseqy/geneseqn-emb1/NA2001.DAT:
/SIDS1/gcgdata/geneseqy-emeseqn-emb1/NA2001.DAT:
/SIDS1/gcgdata/geneseqy-emeseqn-emb1/NA2002.DAT:
/SIDS1/gcgdata/geneseqy-emeseqn-emb1/NA2003.DAT:
/SIDS1/gcgdata/geneseqy/geneseqn-emb1/NA2003.DAT:
/SIDS1/gcgdata/geneseqy-emeseqn-emb1/NA2003.DAT:

Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

SUMMARIES

		дé				
Result		Query	Query		;	
. PO	score	Match	rengtn	g ;	Π	Description
7	1450 1	100.0	1450	21	AAZ47131	Pseudomonas aerugi
7	1347	92.9		23	AAS54275	Pseudomonas aerugi
٣	. 54	3.7	1200	23	AAS51550	Pseudomonas aerugi
Ω •	36	2.5	116	23	AAS48736	Pseudomonas aerugi
2	36	2.5	1083	22	AAF86639	Pseudomonas aerugi
9	36	2.5	1083	23	AAS54276	Pseudomonas aerugi
7	24	1.7	1080	23		DNA encoding novel
80	24	1.7	1080	23		DNA encoding novel

DNA encoding novel	Escherichia coli p	E. coli DNA for ce	DNA encoding novel	Pseudomonas aerugi	Fusarium venenatum	Human polynucleoti	Human c-ski oncopr	മ	Ф	Micromonospora DNA	Human ORFX polynuc	M. tuberculosis an	M. tuberculosis re	Salmonella typhi D	S. aureofaciens te	M. capsulatus gene	Human polynucleoti	TXA2 receptor gene	Human thromboxane	Human endothelial	DNA encoding novel	Human cDNA differe	Human signalling p	. Human thromboxane	Pseudomonas aerugi	Quorum sensing con	Human immune/haema	Nucleotide sequenc	Propionibacterium	Streptomyces nours						
166	460	295	012	095	240	542	816	273	181	641	985	407	230	349	348	693	980	400	188	152	101	059	090	388	161	162	879	654	821	829	094	370	093	960	633	185
AAS9016	AAH81460	AAS52295	AAS73012	AAS69095	AAS89240	AAS94542	AAS89816	AAS89273	AAS90181	AAF86641	AAF07985	AAI59407	AAD0923	AAA63349	AAA63348	AAS08693	ABN23890	AAZ19400	AA219188	AAS56152	AAV59101	ABQ9005	AA158060	AAQ25388	AAZ32161	AAZ32162	AAS65879	ABK83654	ACA56821	AB242829	AAS54094	AAF81370	AAK7409	AAA7509	AAS5963	AAD1718
23	22	23	23	23	23	23	23	23	23	22	21	22	22	21	21	22	24	20	50	23	20	24	22	13	20	20	23	74	25	25	23	22	22	21	23	22
1080	1317	1317	2058	3117	3117	4831	4942	4944	4944	27	507	3511	3511	42000	63164	109519	359	522	522	996	1362	1857	2169	2932	2932	2932	2932	2932	2932	2932	3489	6390	9333	14272	21500	27541
1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.5	1.4	1.4	1.4	1.4	1.4	1.4	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1,3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
24	24	24	24	24	24	24	24	24	24	22	70	70	20	20	20	20	19	19	19	19	13	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19
o.	0		~	m		2	0	7	æ	6	0	_	2	9	₹*	r.	9	7	œ	o	0	_	2		4	ις.	v.	7	œ	σ	0	_	7		4	Ŋ
- '	Ä	H	H	Н	Ä	Ä	Ä	Ή	Ä	-	Ñ	7	~	~	7	7		7	7	29	m	m		m	ň			'n	m	č	4	4	4	4	4	4
										O		J	U	O	J	J	J						ບ										J	υ	J	

ALIGNMENTS

MurD; bacterial cell wall; biosynthesis; inhibitor; UDP-N-acetylmuramyl-L-alanine precursor; ds. Pseudomonas aeruginosa murD gene. AAZ47131 standard; DNA; 1450 BP. 99WO-US11585. 28-MAR-2000 (first entry) Pseudomonas aeruginosa 26-MAY-1999; W09961050-A1 02-DEC-1999. AAZ47131; RESULT 1 AAZ47131 

D-glutamate;

98US-0087308 (MERI ) MERCK & CO INC. 29-MAY-1998;

B; El-Sherbeini M, Azzolina

WPI; 2000-072548/06. P-PSDB; AAY56047.

New nucleic acid encoding the MurD protein of Pseudomonas aeruginosa,

S S

\$ g

9 0 0 0 g

oy Oy

δ

oy do y

g

```
1080
                                                                                                                                                                                                                                                                     1080
                                                                                                                                                                                                                                                                                                                                                   1200
                                                                                                                                                                                                                                                                                                                                                                           1200
                                                                                                                                                                                                                                                                                                                                                                                                                                                           1320
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 TAGAGGAGCTAGCGTGATGCTGTCGGTGTTGCGCCCCTTCCCGTCGCCGGTGTTGAGCCG 1440
                                                                                                                                                                                        CCGGCCTGGCTCATCGCTGCCAGTGGGTACGCGAGCGGCAGGGGCGTGAGCTACTACGACG 1020
                                                                                                                                    960
                                                                                                                                                             960
 TGATCGCCGATACCGTGCCGTGCTGGTCGTTCGGCCTGAACAAGCCGGACTTCAAGGCTT 780
                          CGGTTGGCGAACTGAAGATCCGTGGCGCCCACAACTATTCCAACGCTCGCCGGGCTGG
                                                                                                                                                  ATTCCAAGGCCACCAACGTCGGCGCCGCCTGGCGGCGATCGAGGGGCTGGGTGCCGACA
                                                                                                                                                                                                                                                          TGCGCGAGCCGGTCGCGCGCTTCTGCCGGGCGGTGGTACTGCTTGGCCGTGACGCCGGGC
                                                                                                                                                                                                                                                                                                                                                                                                       TGATTGCCCAGGCACTGGGCAACGCGGTACCGCTGGTGCGCGTCGCAACGCTGGACGAAG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                           CAGTCCGGCAGGCCGCCGAGCTGCCCGCGAAGGCGATGCGGTGCTGTTGTTGTTCGCCGGCCT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               GCGCGAGCCTGGACATGTTCAAGAACTTCGAAGAACGCGGACGCCTGTTCGCCAAAGCCG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             CGCTGGGCCATGCGGTCGGCCTGCCGTTCGACGCCATGCTCGGCGCGCTGAAGGCGGTTTT
                                                                                                                                                                                                                                                                                                                                                                                                                                                           CAGTCCGGCAGGCCGCCGAGCTGGCCGCGGAAGGCGATGCGGTGCTGTTGTCGCCGGCCT
                                                                                                                                                                                                                                                                                                                                                   TGCGCGAGCCGGTCGCGCGTTCTGCCGGGCGGTGGTACTGCTTGGCCGTGACGCCGGGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Pseudomonas aeruginosa DNA for cellular proliferation protein #406
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Antisense; ds; prokaryotic cellular proliferation gene, antibiotic; antibacterial; drug design.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    BP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    AAS54275 standard; DNA; 1347
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   21-MAR-2001; 2001WO-US09180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              21-MAR-2000; 2000US-191078P.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       GCACGCCATC 1450
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Pseudomonas aeruginosa
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              WO200170955-A2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       13-FEB-2002
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          27-SEP-2001
                                                                                                                                                                                                                                           1021
                                                                                                                                                                                                                                                                      1021
                                                                                                                                                                                                                                                                                              1081
                                                                                                                                                                                                                                                                                                                         1081
                                                                                                                                                                                                                                                                                                                                                   1141
                                                                                                                                                                                                                                                                                                                                                                             1141
                                                                                                                                                                                                                                                                                                                                                                                                                                 1201
                                                                                                                                                                                                                                                                                                                                                                                                                                                           1261
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      1261
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               1321
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         1321
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   1381
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             1381
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               1441
 721
                          781
                                                     781
                                                                                                          841
                                                                                                                                                             901
                                                                                                                                                                                        961
                                                                                                                                                                                                                                                                                                                                                                                                       1201
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1441
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            AAS54275;
                                                                                841
                                                                                                                                  901
                                                                                                                                                                                                                  961
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      AAS5427
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         RESULT
                                                     8
                                                                                                     셤
                                                                                                                                  à
                                                                                                                                                           a
                                                                                                                                                                                                           셤
                                                                                                                                                                                                                                           à
                                                                                                                                                                                                                                                            셤
                                                                                                                                                                                                                                                                                       ò
                                                                                                                                                                                                                                                                                                                      요
                                                                                                                                                                                                                                                                                                                                                   ò
                                                                                                                                                                                                                                                                                                                                                                       8
                                                                                                                                                                                                                                                                                                                                                                                                      ò
                                                                                                                                                                                                                                                                                                                                                                                                                               셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                    ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ð
                                                                                à
                                                                                                                                                                                      à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            용
                                                                                                                                                                                                                                                                                                                                                               120
                                                                                                                                                                                                                                                                                                                                                                             180
                                                                                                                                                                                                                                                                                                                                                                                                                                               180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                        240
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   240
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            300
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     300
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                360
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         360
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   420
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       480
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 900
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       99
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            420
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   480
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 099
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            720
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     720
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                780
                                                               MurD is an enzyme involved in blosynthesis of bacterial cell walls, so inhibiting it inhibits bacterial growth (by preventing mulb, mulb-catalyzed addition of D-glutamate to an alanyl residue in the UDP-Nacetylmuramyl-L-alanine precursor). Calls that express murD protein can be used: (a) to identify inhibitors of MurD, and (b) for recombinant production of MurD, which is used to raise specific antibodies (potential therapeutic inhibitors). Fragments of the murD gene can be used as probes and primers to detect P. meruping sequences (to identify polymorphic murD genes or to detect P. merupings, as antisense modulators. The murD inhibitors are useful for treating or preventing bacterial infections, including those caused by P. merupinosa.
                                                                                                                                                                                                                                                                                                                                    9
                                                                                                                                                                                                                                                                                                                         GCTACCTGGCGCGCGCGCGTTGCCTTTCGCCGTGGTCGATACCCGAGAGACCCGCCGG
                                                                                                                                                                                                                                                                                                                                                                                                                                  AGCTGGCCACCTGCGTGCCCAGTATCCGCAGTGGAAGTGCGTTGCGGCGAACTCGACG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     CCGAGTTCCTCTGCTCCGCCCGCGAACTCTATGTCAGCCCCGGCTTGTCGCTGCGCACCC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       CCCGCGAGGCGAAGGCCCCGATCGTCGCCATCACCGGTTCCAACGCGAAGAGCACGTGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            CCCGCGAGGCGAAGGCCCCGATCGTCGCCATCACCGGTTCCAACGCGAAGAGCACCGTGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       CCACCTGGTGGCGAAATGGCGGTGGCCGCGGACAAGCGTGTCGCCGTCGCGGCGAACC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     TCGGCACCCCGGCGCTCGACCTGCTGGCGACGACATCGAGCTGTACGTGTTGGAGCTGT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          CGAGCTTCCAGCTGGAAACCTGCGATCGCCTCAACGCCGAGGTGGCGACGTGCTGAACG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              GGATCTTCCGCGGTGCCCGCCAGGTCGTGATCGCGCCGATGCCCTGACCCGACCGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               TGATCGCCGATACCGTGCCGTGCTCGTTCGGCCTGAACAAGCCGGACTTCAAGGCTT
                                                                                                                                                                                                                                                                                                           CGTGCTGATCGGCCTCGCCACCTTGAAGCTGCGTTGAGGACGAAGAGAGCATGAGCCTGA
                                                                                                                                                                                                                                                                                                                                                               TCGCCTCCGACCACTTCCGCATCGTTGTCGGCCTCGGCAAGAGCGGCATGTCCCTGGTGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               CTGCGCTGGTACAGGCCGCCGCGAAAGGCGTGCGCATCTCCGGTGACATCGATCTTCG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         GGATCTTCCGCGGGTGCCCGCCAGGTCGTGGTGAATCGCGCCCGATGCCCTGACCCGACCGC
                                                                                                                                                                                                                                                                                 0; Gaps
                                                     gene from Pseudomonas aeruginosa
                                                                                                                                                                                                                                                        DB 21; Length 1450;
                                                                                                                                                                                                                                                                                 Indels
                                                                                                                                                                                                                             Sequence 1450 BP; 227 A; 487 C; 487 G; 249 T; 0 other;
                                                                                                                                                                                                                                                                                 ő
                                                                                                                                                                                                                                                       100.0%; Score 1450;
1larity 100.0%; Pred. No. 0;
Conservative 0; Mismatches
identify specific inhibitors
                                                     sequence represents the MurD
                          35pp;
                          Page 8-9;
                                                                                                                                                                                                                                                                   Best Local Similarity
Matches 1450; Conserv
                                                                                                                                                                                                                                                                                                                                                             61
                                                                                                                                                                                                                                                                                                                                                                                                                 121
                                                                                                                                                                                                                                                                                                                                                                                                                                            121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                       181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             301
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        301
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                361
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            481
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     481
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 541
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         541
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     601
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          361
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       421
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                421
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               601
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         661
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   661
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             721
                                                                                                                                                                                                                                                        Match
 ç
nseq
```

Fri Aug 15 08:06:32 2003

```
TACTACGACGATTCCAAGGCCACCAACGTCGGCGCCCCTGGCCGCGATCGAGGGGCTG 1070
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      1130
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1080
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      1190
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               1140
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               1200
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        1310
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               1260
                                                                                                                                                                                                                                                                                                                                                                                                                     AAGGCGTTTTCCGGCCTGGCTCATCGCTGCCAGTGGGTACGCGGAGCGGCAGGGCGTGAGC 1010
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             TACTACGACGATTCCAAGGCCACCAACGTCGGCGCCGCCTGGCGGCGATCGAGGGGCTG 1020
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       GACGCCGGGCTGATTGCCCAGGCACTGGGCAACGCGGTACCGCTGGTGCGCGTCGCAACG 1250
                                                                                                                                                                                                                                                                                                                                                                                                                                              960
                                                                                                                                                                  710
                                                                                                                                                                                                                                                                                           780
                                                                                                                                                                                                                                                                                                                                           840
                                                                                                                                                                                                                                                                                                                                                                    950
                                                                                                                                                                                                                                                                                                                                                                                            900
                                                                                       540
                                                                                                                650
                                                                                                                                         9
                                                                                                                                                                                        999
                                                                                                                                                                                                                 770
                                                                                                                                                                                                                                          720
                                                                                                                                                                                                                                                                   830
                                                                                                                                                                                                                                                                                                                    890
                                                                                                                                                                                                                               CTGGACGAAGCAGTCCGGCAGGCCGCCGAGCTGCCCGCGAAGGCGATGCGGTGCTGTTG
                                                                                                                                                                                                                                                                                GACGCCGGGCTGATTGCCCAGGCACTGGGCAACGCGGTACCGCTGGTGCGCGCTGCTACGCAACG
                              GCCAAGCACCGGATCTTCCGCGGTGCCCGCCAGGTGGTGGTGGTGGTGGTGGTGCCTG
                                                                                                                                                                                                                                                                                                                     AAGCTGCTGCTGCTGGCGAACTGAAGATCCGTGGCGCCCACAACTATTCCAACGCGCTC
                                                                                                                                                                                                                                                                                                                                 GCCGCGCTGGCGCTGGGCCATGCGGTCGGCCTGCCGTTCGACGCCATGCTCGGCGCGCTG
                                                                                                                                                                                                                                                                                                                                                                                   GCCGCGCTGGCCTGGGCCATGCGGTCGGCCTGCCGTTCGACGCCATGCTCGGCGCGCGTG
                                                                                                                                                                                                                                                                                                                                                                                                                                  GGTGCCGACATCGACGGCAAGCTGGTGCTCGCCGGCGGAGACGGCAAGGGCCCCGAT
                 GGCGGCAACCTCGGCACCCCGGCGCTCGACCTGGCCGACGACATCGAGCTGTACGTG
                                                                 TTGGAGCTGTCGAGCTTCCAGCTGGAAACCTGCGATCGCCTCAACGCCGAGGTGGCGACC
                                                                              GCCAAGCACCGGATCTTCCGCGGTGCCCGCCAGGTCGTGGTGAATCGCGCCGATGCCCTG
                                                                                                                                                                                                                   ACCCGACCGCTGATCGCCGATACCGTGCCGTGCTGGTTCGGCCTGAACAAGCCGGAC
                                                                                                                                                                                                                                                                   TTCCATGACCTGCGCGAGCCGGTCGCGCGCTTCTGCCGGGCGGTGGTACTGCTTGGCCGT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       GCCAAAGCCGTAGAGGAGCTAGCGTGA 1397
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  BP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  AAS51550 standard; DNA; 1200
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    13-FEB-2002
                                                                                                                                                                                                                                                                                                                                                                                                                                              901
                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1011
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               1021
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      1131
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1191
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               1141
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        1251
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                1201
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          1371
                                        421
                                                                 531
                                                                                                                  591
                                                                                                                                                                  651
                                                                                                                                                                                                                   711
                                                                                                                                                                                                                                          661
                                                                                                                                                                                                                                                                   771
                                                                                                                                                                                                                                                                                            721
                                                                                                                                                                                                                                                                                                                    831
                                                                                                                                                                                                                                                                                                                                             781
                                                                                                                                                                                                                                                                                                                                                                    891
                                                                                                                                                                                                                                                                                                                                                                                                                     951
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              196
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      101
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         AAS51550;
                                                                                       481
                                                                                                                                         541
                                                                                                                                                                                          601
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     AAS51550
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         RESULT
                                                                                                                                                                                                                                                                                       g
                                                                                                                                                                                                                                                                                                                    à
                                                                                                                                                                                                                                                                                                                                                                  ŏ
                                                                                                                                                                                                                                                                                                                                                                                           g
                                                                                                                                                                                                                                                                                                                                                                                                                     ò
                                                                                                                                                                                                                                                                                                                                                                                                                                         g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                    δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   HX SX E
                                    셤
                                                                òγ
                                                                                      q
                                                                                                                õ
                                                                                                                                        원
                                                                                                                                                                  ò
                                                                                                                                                                                      q
                                                                                                                                                                                                                   ö
                                                                                                                                                                                                                                         q
                                                                                                                                                                                                                                                                  ö
                                                                                                                                                                                                                                                                                                                                         d
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ò
                                                                                                                                                                                                                                          The invention relates to antisense inhibitors of genes essential to prokaryotic cellular proliferation, their use in identifying the genes, their use in the discovery of novel antibiotics, the essential genes themselves and the encoded proteins. The prokaryotes used are consented as also useful for the identification of potential anythic Klebsiella premunniae, Pseudomonas aeruginosa and Enterococcus faccalis. The invention is also useful for the identification of potential new targets for antibiotic development. The antisense nucleic acids can also be used to identify proteins used in proliferation, to express these proteins. The proteins can be used to screen compounds in rational drug discovery programmes. The antisense nucleic acid sequence is also useful to screen corrections of the proteins can be used to screen compounds in rational drug discovery programmes. The antisense nucleic acid sequence is also useful to screen corrections and evariety of organisms. The present sequence encodes an avide variety of organisms. The present sequence encodes an essential prokaryotic cellular proliferation protein.

The sequence data for this patent did not form part of the printed specification, but was obtained in electronic format directly from MPO at
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 230
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               290
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             240
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       350
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   410
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   470
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     AGCACCGTGACCACCCTGGTGGCGGAAATGGCGGGTGGCCGCGGACAAGCGTGTCGCCGTC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    GAACTCGACGCCGAGTTCCTCTGCTCCGCCCGCGAACTCTATGTCAGCCCCGGCTTGTCG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       CTGCGCACCCCTGCGCTGGTACAGGCCGCCGCGAAAGGCGTGCGCATCTCCGGTGACATC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        GATCTTCGCCCCCCGCGAGGCCCCCGATCGTCGCCCATCACCGGTTCCAACGCGAAG
                                                                                                                  g;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   AACCCGCCGGAGCTGGCCACCCTGCGTGCCCAGTATCCGCAGGTGGAAGTGCGTTGCGGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Gaps
                                                                                                                   Carr
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ;
0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                DB 23; Length 1347;
                                                                                                                                                                                        of.
                                                                                                                  Ę,
                                                                                                                                                                                        New polynucleotides for the identification and development antibiotics, comprise sequences of antisense nucleic acids
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Indels
                                                                                                                  Trawick
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Sequence 1347 BP; 214 A; 453 C; 453 G; 227 T; 0 other;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ö
                                                                                                                  á
                                                                                                                Wall
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Query Match 92.9%; Score 1347; Dest Local Similarity 100.0%; Pred. No. 0; Matches 1347; Conservative 0; Mismatches
                                                                                                                                                                                                                            Claim 27; Seq ID No 7912; 511pp; English.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ftp.wipo.int/pub/published_pct_sequences
                                                                                                                Zyskind JW,
             2000US-207727P.
2000US-242578P.
2000US-253625P.
2000US-257931P.
2001US-269308P.
                                                                                                                Ohlsen KL,
Xu HH;
                                                                                       (ELIT-) ELITRA PHARM INC
                                                                                                                                                    WPI; 2001-611495/70.
P-PSDB; AAU36416.
23-MAY-2000; 2
26-MAY-2000; 2
23-OCT-2000; 2
27-NOV-2000; 2
22-DEC-2000; 2
16-FEB-2001; 2
                                                                                                                α,
                                                                                                                             Yamamoto RT,
                                                                                                               Haselbeck
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 361
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      351
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        411
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   111
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    231
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    291
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               301
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  171
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           181
  å
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ŏ
```

```
The proteins can be used to screen compounds in rational drug discovery programmes. The antisense nucleic acid sequence is also useful to screen for homologous nucleic acids which are required for cell proliferation in a wide variety of organisms. The present sequence is an antisense oligonucleotide of the invention.

Note: The sequence data for this patent did not form part of the printed specification, but was obtained in electronic
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  The invention relates to antisense inhibitors of genes essential to prokaryotic cellular proliferation, their use in identifying the genes, their use in the discovery of novel antibiotics, the essential genes themselves and the encoded proteins. The prokaryotes used are scherical coli, Staphylococcus aureus, Salmonella typhi, Klebsiella pneumoniae, Pseudomonas aeruginosa and Enterococcus faecalis. The invention is also useful for the identification of potential new targets for antibiotic development. The antisense nucleic acids can also be used to identify proteins used in proliferation, to express these proteins, and to obtain antibodies capable of binding to the expressed proteins.
                   Pseudomonas aeruginosa cellular proliferation inhibitory sequence #222.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        New polynucleotides for the identification and development of antibiotics, comprise sequences of antisense nucleic acids -
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Trawick JD,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                2.5%; Score 36; DB 23; Length 116;
100.0%; Pred. No. 3.3e-06;
tive 0; Mismatches 0; Indels
                                                                Antisense; ss; prokaryotic cellular proliferation; antibiotic; antibacterial; drug design.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1415 CCTTCCCGTCGCCGCTGTTGAGCCGGCACGGCATC 1450
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      116 CCCTTCCCGTCGCCGCTGTTGAGCCGGCACCGCATC 81
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Sequence 116 BP; 27 A; 37 C; 44 G; 8 T; 0 other;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Wall D,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ftp.wipo.int/pub/published_pct_sequences
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Claim 1; Seg ID No 1313; 511pp; English.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Ohlsen KL, Zyskind JW,
Xu HH;
                                                                                                                                                                                                                                                                                                                                           2000US-206848P.
2000US-207727P.
2000US-242578P.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          AAF86639 standard; DNA; 1083
                                                                                                                                                                                                                                                                                                                                                                                                            2000US-253625P.
2000US-257931P.
                                                                                                                                                                                                                                                                                                                                                                                      23-OCT-2000; 2000US-24257BP.
27-NOV-2000; 2000US-253625P.
22-DEC-2000; 2000US-257931P.
16-FEB-2001; 2001US-26930BP.
                                                                                                                                                                                                                                                                          21-MAR-2001; 2001WO-US09180.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   17-JUL-2001 (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Best Local Similarity 100.
Matches 36; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         (ELIT-) ELITRA PHARM INC
                                                                                                                                      Pseudomonas aeruginosa
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          WPI; 2001-611495/70.
                                                                                                                                                                                 WO200170955-A2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Haselbeck R,
Yamamoto RT,
                                                                                                                                                                                                                                                                                                                                                33-MAY-2000;
                                                                                                                                                                                                                                                                                                                                                                 26-MAY-2000;
                                                                                                                                                                                                                               27-SEP-2001
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     AAF86639;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          RESULT 5
AAF86639
ID AAF8
XX
AC AAF8
XX
DT 17-J
ద
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  The invention relates to antisense inhibitors of genes essential to prokaryotic cellular proliferation, their use in identifying the genes, their use in the discovery of novel antiblotics, the essential genes themselves and the discovery of novel antiblotics, the essential genes themselves and the encoded proteins. The prokaryotes used are Escherichia coli, Staphylococcus aureus, Salmonella typhi, Klebsiella pneumoniae, Pseudomonas aeruginosa and Enterococcus faccalis. The invention is also useful for the identification of potential new targets for antiblotic development. The antisense nucleic acids can also be used to dentify proteins used in proliferation, to express these proteins. The proteins can be used to screen compounds in rational drug discovery programmes. The antisense nucleic acid sequence is also useful to screen for homologous nucleic acids which are required for cell proliferation in essential prokaryotic cellular proliferation protein.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Carr GJ;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               1397 ATGCTGTCGGTGTTGCGCCCCTTCCCGTCGCCGCTGTTGAGCCGGCACGGCATC 1450
                   Pseudomonas aeruginosa DNA for cellular proliferation protein #135
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               54
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1 AIGCIGICGGGTITCCCCCTTCCCGTCGCCGCTGTTGAGCCGCCACGCATC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         New polynucleotides for the identification and development of antibiotics, comprise sequences of antisense nucleic acids -
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               of the printed specification, but was obtained in electronic format directly from WIPO at
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      3.7%; Score 54; DB 23; Length 1200;
100.0%; Pred. No. 2e-14;
ive 0; Mismatches 0; Indels (
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Trawick JD,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    0; Indels
                                                            1s; prokaryotic cellular proliferation gene; antibacterial; drug design.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Sequence 1200 BP; 157 A; 384 C; 402 G; 257 T; 0 other;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Wall D,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ftp.wipo.int/pub/published_pct_sequences.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Claim 27; Seq ID No 4132; 511pp; English.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Ohlsen KL, Zyskind JW,
Xu HH;
                                                                                                                                                                                                                                                                                                                                                                                    23-OCT-2000; 2000US-242578P.
27-NOV-2000; 2000US-253625P.
22-DEC-2000; 2000US-257931P.
16-FEB-2001; 2001US-269308P.
                                                                                                                                                                                                                                                                     21-MAR-2001; 2001WO-US09180
                                                                                                                                                                                                                                                                                                                                             2000US-206848P.
2000US-207727P.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             RESULT 4
AAS48736/c
ID AAS48736 standard; DNA; 116
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Local Similarity 100.
nes 54; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       (ELIT-) ELITRA PHARM INC
                                                                                                                                 Pseudomonas aeruginosa
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     WPI; 2001-611495/70.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             P-PSDB; AAU33691
                                                              Antisense; ds;
                                                                                                                                                                            WO200170955-A2.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Haselbeck R,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Yamamoto RT,
                                                                                                                                                                                                                                                                                                                   21-MAR-2000;
                                                                                                                                                                                                                          27-SEP-2001.
                                                                                                                                                                                                                                                                                                                                           23-MAY-2000;
26-MAY-2000;
                                                                                      antibiotic;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    13-FEB-2002
```

Carr GJ;

ö

Gaps

ö

AAS48736;

Query Match Matches

å 셤 S

```
The invention relates to antisense inhibitors of genes essential to prokaryotic cellular proliferation, their use in identifying the genes, their use in the discovery of novel antiblotics, the essential genes themselves and the encoded proteins. The prokaryotes used are Escherichia coli, Staphylococcus aureus, Salmonella typhi, Klebsiella premioniae, Pseudomonas acruginosa and Enterococcus faccalis. The invention is also useful for the identification of potential new targets for antiblotic development. The antisense nucleic acids can also be used to obtain antibodies capable of binding to the expressed proteins. The proteins can be used to screen compounds in rational drug discovery programmes. The antisense nucleic acid sequence is also useful to screen for homologous nucleic acids which are required for cell proliferation in essential prokaryotic cellular proliferation protein.
  Pseudomonas aeruginosa DNA for cellular proliferation protein #407
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  New polynucleotides for the identification and development of antibiotics, comprise sequences of antisense nucleic acids -
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     of the printed specification, but was obtained in electronic format directly from WIPO at
                                             prokaryotic cellular proliferation gene;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Sequence 1083 BP; 163 A; 348 C; 336 G; 236 T; 0 other;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1048 GTGCTGATCGGCCTCGCCACCTTGAAGCTGCGTTGA 1083
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            2 GTGCTGATCGGCCTCGCCACCTTGAAGCTGCGTTGA 37
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      2.5%; Score 36; DB 23;
100.0%; Pred. No. 2.6e-06;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Ohlsen KL, Zyskind JW, Wall D,
Xu HH;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          100.0%; Pred. No. 2.6
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Claim 27; Seq ID No 7913; 511pp; English.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    tp.wipo.int/pub/published_pct_sequences.
                                                                 antibiotic; antibacterial; drug design.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   AAS89258 standard; cDNA; 1080
                                                                                                                                                                                                                                                                                                   200005-206848P.
200005-207727P.
200005-242578P.
200005-253625P.
200005-253625P.
200105-269308P.
                                                                                                                                                                                                                                         21-MAR-2001; 2001WO-US09180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       13-FEB-2002 (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Best Local Similarity 100. Matches 36; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                         (ELIT-) ELITRA PHARM INC
                                                                                                            Pseudomonas aeruginosa
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 WPI; 2001-611495/70.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       P-PSDB; AAU36417.
                                             Antisense; ds;
                                                                                                                                                     WO200170955-A2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Haselbeck R,
                                                                                                                                                                                                                                                                                                                                                                                                                16-FEB-2001;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Yamamoto RT,
                                                                                                                                                                                                                                                                                                                          26-MAY-2000;
23-OCT-2000;
                                                                                                                                                                                                                                                                                                                                                                     27 - NOV - 2000;
                                                                                                                                                                                                                                                                                                                                                                                         22-DEC-2000;
                                                                                                                                                                                                                                                                                 21-MAR-2000;
                                                                                                                                                                                                                                                                                                        23-MAY-2000;
                                                                                                                                                                                              27-SEP-2001
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              AAS89258;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        RESULT 7
AAS89258
    Ω×
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              SXEX
XEX
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       This sequence represents the Pseudomonas aeruginosa mray gene, which encodes a phospho-N-acetylmuramcyl-pentapetide translocase designated Mray. The Mray protein is involved in bacterial cell wall biosynthesis. It catalyses the first step of the membrane cycle of peptidoglycan biosynthesis, i.e., the transfer of an N-acetylmuramic acid peptide to a bactoprenol phosphate carrier molecule. The Mray protein is useful in in vitro assays to screen for antibacterial compounds that target cell wall biosynthesis. Inhibitors of the Mray protein are useful in preventing the growth of Pseudomonads and other G+C rich bacteria. Pseudomonas aeruginosa is an opportunistic pathogen which causes Infections in patients with burns, neutropenia, or cystic fibrosis. Primers or probes derived from the mray gene are useful in nucleic acid amplification-based assays for detecting the presence of a polynucleotide
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ö
                                                                                                                                                                                  Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             New MraY gene and enzyme of Pseudomonas aeruginosa, useful in vitro assays for screening antibacterial compounds that target cell wall blosynthesis, particularly for screening antiblotics against
                                        MraY; phospho-N-acetylmuramoyl-pentapeptide translocase; peptidoglycan biosynthesis; bacterial cell wall; infection; drug screening; antibacterial; Pseudomonad; G+C rich bacterium; ds.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ;
0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   2.5%; Score 36; DB 22; Length 1083; 100.0%; Pred. No. 2.6e-06; Live 0; Mismatches 0; Indels (
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Sequence 1083 BP; 164 A; 350 C; 333 G; 236 T; 0 other;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  1048 GIGCIGATCGCCTCGCCACCTTGAAGCTGCTTGA 1083
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            2 GIGCIGATCGGCCTCGCCACCTIGAAGCTGCGTTGA 37
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                encoding Pseudomonas aeruginosa MraY protein
                                                                                                                                                                       Location/Qualifiers
Pseudomonas aeruginosa mraY gene.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Claim 2; Fig 1; 22pp; English.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 AAS54276 standard; DNA; 1083
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     El-Sherbeini M, Azzolina B;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    990S-0157580
                                                                                                                                                                                                                                                                                                                                                                                                                                                      29-SEP-2000; 2000WO-US27056
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       13-FEB-2002 (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Local Similarity 100.
                                                                                                                                Pseudomonas aeruginosa.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            (MERI ) MERCK & CO INC.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              WPI; 2001-308221/32.
P-PSDB; AAB73487.
                                                                                                                                                                                                                                                                                                                                                                   WO200125251-A1.
```

Pseudomonads

Carr GJ;

Trawick JD,

04-OCT-1999;

12-APR-2001

Key

ó

Gaps

ö

Indels

AAS54276;

XXXXXX

RESULT 6 AAS54276

셤

ò

Query Match Best Loca Matches

Length 1083;

```
Dolypeptide (II) sequences (I) is useful as hybridisation probes, polymerase chain reaction (PCR) primers, oligomers, and for chromosome and gene mapping, and in recombinant production of (III). The and gene mapping, and in recombinant production of (II). The polymerase chair section (PCR) primers, oligomers, and for chromosome polymuclectides are also used in diagnostics as expressed sequence tags for identifying expressed genes. (I) is useful in gene therapy techniques to restore normal activity of (II) or to treat disease states involving (II). (II) is useful for generating antibodies against it, detecting or quantitating a polypeptide in tissue, as molecular weight markers and as a food supplement. (II) and its binding partners are useful in medical imaging of sites expressing (II). (I) and (II) are useful for treating disorders involving aberrant protein expression or biological activity. The polypeptide and polymucleotide sequences have applications in diagnostics, forensics, gene mapping, identification of mutations responsible for genetic disorders or other traits to assess biodiversity and to produce other types of data and products dependent on DNA and amino acid sequences. Assoligy-Assolide, invention.

Coding sequences of the invention.

Coding sequences of the invention.

Coding sequence add for this patent did not appear in the printed specification, but was obtained in electronic format directly from WIPO at the wipo.int/pub/published_pct_sequences.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Human; chromosome mapping; gene mapping; gene therapy; forensic; food supplement; medical imaging; diagnostic; genetic disorder; ss.
     Human; chromosome mapping; gene mapping; gene therapy; forensic; food supplement; medical imaging; diagnostic; genetic disorder; ss.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         useful in
of mutations
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   New isolated polynucleotide and encoded polypeptides, useful in diagnostics, forensics, gene mapping, identification of mutation responsible for genetic disorders or other traits and to assess
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    100.0%; Score 24; DB 23; Length 1080; 100.0%; Pred. No. 0.67; tive 0; Mismatches 0; Indels (
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        invention relates to isolated polynucleotide (I) and
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Sequence 1080 BP; 267 A; 253 C; 299 G; 261 T; 0 other;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         DNA encoding novel human diagnostic protein #25970.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Claim 1; SEQ ID No 25605; 103pp; English.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      537 CTGTCGAGCTTCCAGCTGGAAACC 560
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   63
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   CTGTCGAGCTTCCAGCTGGAAACC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  AAS90166 standard; cDNA; 1080 BP
                                                                                                                                                                                                                                                                                                                                                                                                                            Tang YT;
                                                                                                                                                                                                                                                                                              31-MAR-2000; 2000US-0540217.
23-AUG-2000; 2000US-0649167.
                                                                                                                                                                                                                                          30-MAR-2001; 2001WO-US08631
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      13-FEB-2002 (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  24; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Best Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                          Drmanac RT, Liu C,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                             WPI; 2001-639362/73
                                                                                                                                                                                                                                                                                                                                                                         (HYSE-) HYSEQ INC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           P-PSDB; ABG25614
                                                                                                                                 WO200175067-A2.
                                                                                   Homo sapiens.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         biodiversity
                                                                                                                                                                                       11-OCT-2001.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   40
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   AAS90166;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    RESULT 9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       AAS90166
        ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             The invention relates to isolated polynucleotide (I) and polypeptide (II) sequences. (I) is useful as hybridisation probes, polymerase chain reaction (PCR) primers, oligomers, and for chromosome and gene mapping, and in recombinant production of (II). The polynucleotides are also used in diagnostics as expressed sequence tags for identifying expressed genes. (I) is useful in gene therapy techniques to restore normal activity of (II) or to treat disease states involving (II). (II) is useful for generating antibodies against it, detecting or quantitating a polypeptide in tissue, as molecular weight markers and as a food supplement. (II) and its binding partners are useful in medical imaging of sites expressing (II). (I) and (II) are useful for treating the polypeptide and polynucleotide sequences have applications in diagnostics, forensics, gene mapping, identification of mutations responsible for genetic disorders or other traits to assess biodiversity amino acid sequences. Assolig7-Assolfot represent novel human amino acid sequences. Assolig7-Assolfot represent novel human
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Note: The sequence data for this patent did not appear in the printed specification, but was obtained in electronic format directly from WIPO
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Gaps
                                                   Human; chromosome mapping; gene mapping; gene therapy; forensic; food supplement; medical imaging; diagnostic; genetic disorder; ss.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    New isolated polynucleotide and encoded polypeptides, useful in diagnostics, forensics, gene mapping, identification of mutations responsible for genetic disorders or other traits and to assess
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             DB 23; Length 1080; 0.67;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                0; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Sequence 1080 BP; 267 A; 253 C; 299 G; 261 T; 0 other;
DNA encoding novel human diagnostic protein #25062.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     DNA encoding novel human diagnostic protein #25605.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ftp.wipo.int/pub/published_pct_sequences.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          100.08; Pred. ...
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Claim 1; SEQ ID No 25062; 103pp; English.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                1.7%; Score 24;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 537 CTGTCGAGCTTCCAGCTGGAAACC 560
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              CTGTCGAGCTTCCAGCTGGAAACC 63
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                AAS89801 standard; cDNA; 1080 BP.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Tang YT;
                                                                                                                                                                                                                                                                                        30-MAR-2001; 2001WO-US08631
                                                                                                                                                                                                                                                                                                                                           2000US-0540217
                                                                                                                                                                                                                                                                                                                                                                      23-AUG-2000; 2000US-0649167
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 13-FEB-2002 (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Best Local Similarity 100.(
Matches 24; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           WPI; 2001-639362/73.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Drmanac RT, Liu C,
                                                                                                                                                                                                                                                                                                                                                                                                                       (HYSE-) HYSEQ INC.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      P-PSDB; ABG25071
                                                                                                                                                                               WO200175067-A2.
                                                                                                                                 Homo sapiens
                                                                                                                                                                                                                                                                                                                                           31-MAR-2000;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               biodiversity
                                                                                                                                                                                                                                     11-OCT-2001
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   AAS89801;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                AAS89801
```

ö

Gaps

ö

ö g XXXXXXX

Zyskind JW;

```
Novel nucleic acids encoding proteins required for Escherichia coli proliferation, useful for screening for antimicrobial agents -
                                                                                                                                                                                                                                                                            Claim 9; Page 388-389; 596pp; English.
                                                                               19-DEC-2000; 2000WO-US34419.
                                                                                                                                      (ELIT-) ELITRA PHARM INC
                                                                                                                                                                  Ohlsen KL,
                                                                                                                                                                                           WPI; 2001-457376/49.
P-PSDB; AAG98404.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           present invention.
 Escherichia coli.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Escherichia coli.
                          WO200148209-A2.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       WO200170955-A2.
                                                                                                         23-DEC-1999;
                                                                                                                                                                  Forsyth RA,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            13-FEB-2002
                                                     05-JUL-2001
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 27-SEP-2001
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  AAS52295;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            RESULT 11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         AAS52295
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                g
 ö
                                                                                                                                                                                                                                                                                                                                                                      polypeptide (II) sequences. (I) is useful as hybridisation probes, polymerase chain reaction (PCR) primers, oligomers, and for chromosome and gene mapping, and in recombinant production of (II). The polymucleotides are also used in diagnostics as expressed sequence tags for identifying expressed genes. (I) is useful in gene therapy techniques to restore normal activity of (II) or to treat disease states involving (II). (II) is useful for generating antibodies against it, detecting or quantitating a polypeptide in tissue, as molecular weight markers and as a food supplement. (II) and its binding partners are useful in medical maging of sites expressing (II). (I) and (II) are useful for treating disorders involving aberrant protein expression or biological activity. The polypeptide and polymucleotide sequences have applications in diagnostics, forensics, gene mapping, identification of mutations responsible for genetic disorders or other traits to assess biodiversity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    and to produce other types of data and products dependent on DNA and amino acid sequences. AAS64197-AAS94564 represent novel human diagnostic coding sequences of the invention.

Note: The sequence data for this patent did not appear in the printed specification, but was obtained in electronic format directly from WIPO
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Escherichia coli protein encoding nucleotide sequence SEQ ID NO:259.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Escherichia col1; identification; proliferation; microorganism; antimicrobial; antibacterial; antibiotic; gene therapy; diagnosis; bacterial growth inhibition; ds.
                                                                                                                                                                                                                                                                             diagnostics, forensics, gene mapping, identification of mutations responsible for genetic disorders or other traits and to assess
                                                                                                                                                                                                                                                             New isolated polynucleotide and encoded polypeptides, useful in
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Score 24; DB 23; Length 1080;
Pred. No. 0.67;
); Mismatches 0; Indels (
                                                                                                                                                                                                                                                                                                                                                            The invention relates to isolated polynucleotide (I) and
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Sequence 1080 BP; 267 A; 253 C; 299 G; 261 T; 0 other;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           at ftp.wipo.int/pub/published_pct_sequences.
                                                                                                                                                                                                                                                                                                                               Claim 1; SEQ ID No 25970; 103pp; English.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         537 CTGTCGAGCTTCCAGCTGGAAACC 560
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         40 CTGTCGAGCTTCCAGCTGGAAACC 63
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                1.7%,
100.0%; Pre-
0; '
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       AAH81460 standard; DNA; 1317 BP.
                                                                                                                                                                                         Tang YT;
                                                                                                                     31-MAR-2000; 2000US-0540217, 23-AUG-2000; 2000US-0649167
                                                                                           30-MAR-2001; 2001WO-US08631
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              21-SEP-2001 (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             24; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Local Similarity
                                                                                                                                                                                                                  WPI; 2001-639362/73.
P-PSDB; ABG25979.
                                                                                                                                                                                           Drmanac RT, Liu C,
                                                                                                                                                               (HYSE-) HYSEQ INC.
                                     WO200175067-A2.
           Homo sapiens.
                                                                                                                                                                                                                                                                                                      biodiversity
                                                                 11-OCT-2001
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    AAH81460;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Matches
ŏ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   g
```

```
The present invention describes a purified or isolated nucleic acid sequence (I) consisting essentially of one of the 93 nucleotide sequences given in AAH81202 to AAH81294, where expression of the nucleic acid in a microorganism is capable of inhibiting proliferation of a microorganism. (I) have antibacterial and antibiotic activities, and can be used in of the microorganism, of the manufactured antibiotic is useful for reducing the activity or level of a gene product required for proliferation of a microorganism in a subject, specifically humans. The nucleic acids that inhibit bacterial growth or proliferation can be used as antisense therapeutics for Killing bacteria. In addition to therapeutic applications, the nucleic acid sequences complementary to
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              be used as probes to identify particular microorganism species in citinical specimens. AARB187 encode the Escherichia coll proteins given in AAG98239 to AAG98431, and AARB1488 to AARB1491 represent oligonuclectides, which are used in the exemplification of the
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                For example, incleic acid probes complementary to proliferation-required sequences that are specific for particular species of microorganisms can
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               sequences required for proliferation can be used as diagnostic tools.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                DB 22; Length 1317; 0.66;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   0; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Antisense; ds; prokaryotic cellular proliferation gene;
antibiotic; antibacterial; drug design.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Sequence 1317 BP; 294 A; 323 C; 400 G; 300 T; 0 other;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             coli DNA for cellular proliferation protein #17.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           1.7%; Scor.
100.0%; Pred. No. ...
0; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 537 CTGTCGAGCTTCCAGCTGGAAACC 560
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               475 CTGTCGAGCTTCCAGCTGGAAACC 498
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  AAS52295 standard; DNA; 1317 BP.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Best_Local Similarity 100.0
Matches 24; Conservative
```

ö

```
The invention relates to isolated polynucleotide (I) and probes, polypeptide (II) sequences. (I) is useful as hybridisation probes, polypeptide (II) sequences. (I) is useful as hybridisation probes, polymerase chain reaction (PCR) primers, oligomers, and for chromosome and gene mapping, and in recombinant production of (II). The colonical probes (I) is useful in gene therapy techniques to restore normal activity of (II) or to treat disease states involving to restore normal activity of (II) or to treat disease states involving to restore normal activity of (II) or to treat disease states involving a food supplement. (II) and it issue, as molecular weight markers and as a food supplement. (II) and its binding partners are useful in medical maging of sites expressing (II). (I) and (II) are useful in medical insolving aberrant protein expression or biological activity. The polypeptide and polynuclectide sequences have applications in cappostics, forensics, gene mapping, identification of mutations responsible for genetic disorders or other trails to assess biodiversity and to produce other types of data and products dependent on DNA and amino acid sequences. AAS64197-AAS94564 represent novel human DNA and among acid sequences of the invention.

Specification, but was obtained in electronic format directly from WIPO specification.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Human; chromosome mapping; gene mapping; gene therapy; forensic; food supplement; medical imaging; diagnostic; genetic disorder; ss.
                                                                                                                                                                                                                                                                                                                  New isolated polynucleotide and encoded polypeptides, useful in diagnostics, forensics, gene mapping, identification of mutations responsible for genetic disorders or other traits and to assess biodiversity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           1.7%; Score 24; DB 23; Length 2058; 100.0%; Pred. No. 0.63; tive 0; Mismatches 0; Indels (
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Sequence 2058 BP; 496 A; 526 C; 574 G; 462 T; 0 other;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    DNA encoding novel human diagnostic protein #4899.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    at ftp.wipo.int/pub/published_pct_sequences.
                                                                                                                                                                                                                                                                                                                                                                                                                                           Claim 1; SEQ ID No 8816; 103pp; English
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1801 CTGTCGAGCTTCCAGCTGGAAACC 1824
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               537 CTGTCGAGCTTCCAGCTGGAAACC 560
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            AAS69095 standard; cDNA; 3117 BP
  30-MAR-2001; 2001WO-US08631
                                                   31-MAR-2000; 2000US-0540217
23-AUG-2000; 2000US-0649167
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              30-MAR-2001; 2001WO-US08631
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   13-FEB-2002 (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Query Match 1.7'
Best Local Similarity 100.
Matches 24; Conservative
                                                                                                                                                                                     Drmanac RT, Liu C,
                                                                                                                                                                                                                                      WPI; 2001-639362/73.
P-PSDB; ABG08825.
                                                                                                                                  (HYSE-) HYSEQ INC.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       WO200175067-A2.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Homo saptens.
                                                                                                                                                                                                                                                                                                                                                                                                biodiversity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          11-OCT-2001.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                AAS69095;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              RESULT 13
     a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  The invention relates to antisense inhibitors of genes essential to prokaryotic cellular proliferation, their use in identifying the genes, their use in the discovery of novel antibiotics, the essential genes themselves and the encoded proteins. The prokaryotes used are Escherichia coli, Staphylococcus aureus, Salmonella typhi, Klebsiella premioniae, Pseudomensa aeruqinosa and Enterococcus faccalis. The invention is also useful for the identification of potential new targets for antibiotic development. The antisense nucleic acids can also be used to identify proteins used in proliferation, to express these proteins, and to obtain antibodies capable of binding to the expresse proteins. The proteins can be used to screen compounds in rational drug discovery programmes. The antisense nucleic acid sequence is also useful to screen for homologous nucleic acids which are required for cell proliferation in a wide variety of organisms. The present sequence encodes an essential prokaryotic cellular proliferation protein.

Note: The sequence data for this patent did not form part control of the printed specification, but was obtained in electronic form the control of the printed specification, but was obtained in electronic
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ö
                                                                                                                                                                                                                                                                                                               Ohlsen KL, Zyskind JW, Wall D, Trawick JD, Carr GJ;
Xu HH;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Human; chromosome mapping; gene mapping; gene therapy; forensic; food supplement; medical imaging; diagnostic; genetic disorder; ss.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                    New polynucleotides for the identification and development of antibiotics, comprise sequences of antisense nucleic acids -
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      DB 23; Length 1317; 0.66;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          0; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Sequence 1317 BP; 294 A; 323 C; 400 G; 300 T; 0 other;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  DNA encoding novel human diagnostic protein #8816.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      1.7%; Score 24; DB 100.0%; Pred. No. 0.6 tive 0; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Claim 27; Seq ID No 5932; 511pp; English.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       format directly from WIPO at
ftp.wlpo.int/pub/published_pct_sequences.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             537 CTGTCGAGCTTCCAGCTGGAAACC 560
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           475 CIGICGAGCIICCAGCIGGAAACC 498
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             AAS73012 standard; cDNA; 2058 BP
                                                                                                 26-MAY-2000; 2000US-207727P.
23-CCT-2000; 2000US-242578P.
27-NOV-2000; 2000US-25525P.
22-DEC-2000; 2000US-25931P.
16-FEB-2001; 2001US-269308P.
21-MAR-2001; 2001WO-US09180.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 13-FEB-2002 (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Query Match 1.7%
Best Local Similarity 100.0
Matches 24; Conservative
                                                                                                                                                                                                                                                              (ELIT-) ELITRA PHARM INC
                                                                                                                                                                                                                                                                                                                                                                                        WPI; 2001-611495/70.
P-PSDB; AAU34436.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        WO200175067-A2
                                                                                                                                                                                                                                                                                                            Haselbeck R,
Yamamoto RT,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Homo saptens
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           11-OCT-2001.
                                                                                 23-MAY-2000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              AAS73012;
```

RESULT 12 AAS7301;

셤 ð

ö

Gaps

ö

σ

```
The invention relates to isolated polynucleotide (I) and polypeptide (II) sequences. (I) is useful as hybridisation probes, polymerase chair reaction (PCR) primers, oligomers, and for chromosome and gene mapping, and in recombinant production of (II). The cand gene mapping, and in recombinant production of (II). The polynucleotides are also used in diagnostics as expressed sequence tags for identifying expressed genes. (I) is useful in gene therapy techniques to restore normal activity of (II) or troublesses states involving (II) (II) and its binding partners are useful in medical imaging of sites expressing (II). (I) and (II) are useful for treating clisorders involving aberrant protein expression or biological activity. The polypeptide and polynucleotide sequences have applications in cliangomatics, forensics, gene mapping, identification of mutations cresponsible for genetic disorders or other traits to assess biodiversity and to produce other types of data and products dependent on DNA and and all and the produce other types of data and products dependent on DNA and the analysis of the produce o
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           diagnostic coding sequences of the invention.

Note: The sequence data for this patent did not appear in the printed specification, but was obtained in electronic format directly from WIPO
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Human; chromosome mapping; gene mapping; gene therapy; forensic; food supplement; medical imaging; diagnostic; genetic disorder; ss.
                                                                                                                                                                                                                                                  New isolated polynucleotide and encoded polypeptides, useful in diagnostics, forensics, gene mapping, identification of mutations responsible for genetic disorders or other traits and to assess
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1.7%; Score 24; DB 23; Length 3117;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Sequence 3117 BP; 749 A; 820 C; 856 G; 692 T; 0 other;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      DNA encoding novel human diagnostic protein #30346.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           at ftp.wipo.int/pub/published_pct_sequences
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          100.0%; Pred. No. 0.6
tive 0; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                     Claim 1; SEQ ID No 25044; 103pp; English.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       537 CTGTCGAGCTTCCAGCTGGAAACC 560
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       373 CTGTCGAGCTTCCAGCTGGAAACC 396
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       AAS94542 standard; cDNA; 4831 BP.
                                                                                               Tang YT;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                30-MAR-2001; 2001WO-US08631
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            2000US-0540217
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            2000US-0649167
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Query Match 1.78
Best Local Similarity 100.0
Matches 24; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             13-FEB-2002 (first entry)
                                                                                            Drmanac RT, Liu C,
                                                                                                                                                      WPI; 2001-639362/73
P-PSDB; ABG25053.
                                   (HYSE-) HYSEQ INC.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            (HYSE-) HYSEQ INC.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         WO200175067-A2.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Homo sapiens.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            23-AUG-2000;
                                                                                                                                                                                                                                                                                                                                                  biodiversity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         31-MAR-2000;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      11-OCT-2001.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   AAS94542;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             RESULT 15
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          AAS94542
         ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                The invention relates to isolated polynucleotide (I) and polypeptide (II) sequences. (I) is useful as hybridisation probes, polymerase chain reaction (PCR) primers, oligomers, and for chromosome and gene mapping, and in recombinant production of (II). The polynucleotides are also used in diagnostics as expressed sequence tags for identifying expressed genes. (I) is useful in gene therapy techniques to restore normal activity of (II) or to treat disease states involving cuantitating a polypeptide in tissue, as molecular weight markers and as a food supplement. (II) and its binding partners are useful in medical imaging of sites expressing (II). (I) and (II) are useful for treating of disorders involving aberrant protein expression or biological activity. The polypeptide and polynucleotide sequences have applications in diapostics, forensics, gene mapping, identification of mutations responsible for genetic disorders or other trails to assess bioliversity and to produce other types of data and products dependent on DNA and amno acid sequences. AAS6419-AAS94564 represent novel human of the printed amno acid sequence data for this patent did not appear in the printed sequence. The sequence data for this patent did not appear in the printed sequence.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Human; chromosome mapping; gene mapping; gene therapy; forensic; food supplement; medical imaging; diagnostic; genetic disorder; ss.
                                                                                                                                                                                                                                                                                                            New isolated polynucleotide and encoded polypeptides, useful in diagnostics, forensics, gene mapping, identification of mutations responsible for genetic disorders or other traits and to assess biodiversity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    1.7%; Score 24; DB 23; Length 3117;
100.0%; Pred. No. 0.6;
tive 0; Mismatches 0; Indels (
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 0; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Sequence 3117 BP; 749 A; 820 C; 856 G; 692 T; 0 other;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             DNA encoding novel human diagnostic protein #25044.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ftp.wipo.int/pub/published_pct_sequences.
                                                                                                                                                                                                                                                                                                                                                                                                                                                               Claim 1; SEQ ID No 4899; 103pp; English.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             537 CIGICGAGCIICCAGCIGGAAACC 560
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 373 CTGTCGAGCTTCCAGCTGGAAACC 396
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             AAS89240 standard; cDNA; 3117 BP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                30-MAR-2001; 2001WO-US08631.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      2000US-0540217
2000US-0649167
31-MAR-2000; 2000US-0540217
23-AUG-2000; 2000US-0649167
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   13-FEB-2002 (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    24; Conservative
                                                                                                                                                                                                               WPI; 2001-639362/73.
P-PSDB; ABG04908.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Local Similarity
                                                                                                                                                         Drmanac RT, Liu C,
                                                                                            (HYSE-) HYSEQ INC.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   W0200175067-A2.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   31-MAR-2000;
23-AUG-2000;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Homo sapiens
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                11-0CT-2001.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       AAS89240;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Query Match
```

Matches

ŏ 셤

RESULT 14 AAS89240

ö

Gaps

ö

Indels

ö

0.6;

```
New isolated polynucleotide and encoded polypeptides, useful in diagnostics, forensics, gene mapping, identification of mutations responsible for genetic disorders or other traits and to assess biodiversity
                                                                                                                                                                                                                                                                                                                                                     Claim 1; SEQ ID No 30346; 103pp; English.
Drmanac RT, Liu C, Tang YT;
                                                                   WPI; 2001-639362/73.
                                                                                                            P-PSDB; ABG30355
```

The invention relates to isolated polynucleotide (I) and polypeptide (II) sequences. (I) is useful as hybridisation probes, polymeratase chain reaction (PGR) primers, oligomers, and for chromosome and gene mapping, and in recombinant production of (II). The polynucleotides are also used in diagnostics as expressed sequence tags for identifying expressed genes. (I) is useful in gene therapy techniques to restore normal activity of (II) or to treat disease states involving to restore normal activity of (II) or to treat disease states involving apply peptide in tissue, as molecular weight markers and as a food supplement. (II) and its binding partners are useful in medical maging of sites expressing (II). (I) and (II) are useful in medical imaging of sites expressing (II). (I) and (II) are useful in medical flood special activity. (II) the polypeptide and polynuclectide sequences have applications in the produce other types of data and products dependent on DNA and amino acid sequences. AAS64197-AAS94564 represent novel human call sequence data for this patent did not appear in the printed special call of the invention.

Note: The sequence data for this patent did not appear in the printed at fite. Who. int/pub/published\_pct\_sequences. 

Gaps ö Query Match 1.7%; Score 24; DB 23; Length 4831; Best Local Similarity 100.0%; Pred. No. 0.58; Matches 24; Conservative 0; Mismatches 0; Indels 0 Sequence 4831 BP; 1180 A; 1249 C; 1353 G; 1049 T; 0 other;

ö

ò g

Search completed: August 14, 2003, 04:47:00 Job time : 425 secs

GenCore version 5.1.6 Copyright (c) 1993 - 2003 Compugen Ltd.

OM nucleic - nucleic search, using sw model

August 14, 2003, 01:48:19; Search time 1500 Seconds (without alignments) 2163.342 Million cell updates/sec Run on:

Perfect score:

US-09-701-229-1 1450

Sednence:

IDENTITY\_NUC Gapop 10.0 , Gapext 1.0 Scoring table:

1504479 seqs, 1118970152 residues Searched:

3008958 Total number of hits satisfying chosen parameters:

Minimum DB seq length: 0 Maximum DB seq length: 200000000

Post-processing: Minimum Match 0% Maximum Match 100% Listing first 45 summaries

Database

Published\_Applications\_NA:

(cgn2\_6/ptodata/1/pubpna/US07\_PUBCOMB.seq:\*
(cgn2\_6/ptodata/1/pubpna/DCT\_NEW\_PUB.seq:\*
(cgn2\_6/ptodata/1/pubpna/US06\_PUBCOMB.seq:\*
(cgn2\_6/ptodata/1/pubpna/US06\_PUBCOMB.seq:\*
(cgn2\_6/ptodata/1/pubpna/US06\_PUBCOMB.seq:\*
(cgn2\_6/ptodata/1/pubpna/DS07\_NEW\_PUB.seq:\*
(cgn2\_6/ptodata/1/pubpna/US08\_NEW\_PUB.seq:\*
(cgn2\_6/ptodata/1/pubpna/US08\_NEW\_PUB.seq:\*
(cgn2\_6/ptodata/1/pubpna/US08\_NEW\_PUB.seq:\*
(cgn2\_6/ptodata/1/pubpna/US08\_NEW\_PUB.seq:\*
(cgn2\_6/ptodata/1/pubpna/US08\_NEW\_PUB.seq:\*
(cgn2\_6/ptodata/1/pubpna/US09\_NEW\_PUB.seq:\*

//ggn2\_6/ptodata/1/pubpna/US09B\_PUBCOMB.seq:\*
/cgn2\_6/ptodata/1/pubpna/US09\_LUBCOMB.seq:\*
/cgn2\_6/ptodata/1/pubpna/US09\_NEW\_PUB.seq:\*
/cgn2\_6/ptodata/1/pubpna/US0B\_PUBCOMB.seq:\*
/cgn2\_6/ptodata/1/pubpna/US0B\_PUBCOMB.seq:\*
/cgn2\_6/ptodata/1/pubpna/USOB\_NEW\_PUB.seq:\*
/cgn2\_6/ptodata/1/pubpna/USOB\_NEW\_PUB.seq:\*
/cgn2\_6/ptodata/1/pubpna/USOB\_NEW\_PUB.seq:\*

Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

SUMMARIES

		dР				
Result No.	Score	Query Match	Length DB	DB	ID	Description
1	1347	92.9	1347	6	US-09-815-242-7912	Sequence 7912, Ap
7	332.8	23.0	1317	σ	US-09-815-242-9978	Sequence 9978, Ap
m	278.6	19.2	1317	σ	US-09-741-669-259	Sequence 259, App
4	278.6	19.2	1317	6	US-09-815-242-5932	Sequence 5932, Ap
S	180.6	12.5	9025608	14	US-10-156-761-1	Sequence 1, Appli
9	180.2	12.4	1401	14	US-10-156-761-6097	Sequence 6097, Ap
7	173.8	12.0	1461	10	US-09-712-363-79	Sequence 79, Appl
œ	149.8	10.3	1314	σ	US-09-815-242-7090	Sequence 7090, Ap
σ	149.8	10.3	1830121	14	US-10-329-960-1	Sequence 1, Appli
10	91.8	6.3	1352	10	US-09-974-300-1685	Sequence 1685, Ap
c 11	98	5.9	3309400	7	US-09-738-626-1	Sequence 1, Appli
12	68.4	4.7	795	14	US-10-156-761-5987	Sequence 5987, Ap
c .13	68.4	4.7	9025608	14	US-10-156-761-1	Sequence 1, Appli
c 14	29	4.6	w	10	US-09-790-988-1	Sequence 1, Appli
15	66.2	4.6		14	US-10-156-761-2268	Sequence 2268, Ap
16	99	4.6	1959	14	US-10-156-761-2777	Sequence 2777, Ap

Sequence 1, Appli	Sequence 32, Appl	Sequence 1, Appli	Sequence 3946, Ap	Sequence 4634, Ap	Sequence 6900, Ap		Sequence 2510, Ap	Sequence 7755, Ap	21,	~	7683,	Sequence 1880, Ap	7,	Sequence 7, Appli	7,	Sequence 7, Appli	Sequence 3, Appli	Sequence 3, Appli	e,	Sequence 3, Appli	Sequence 1, Appli	Sequence 1, Appli	Sequence 1, Appli	Sequence 1, Appli	Sequence 6049, Ap	Sequence 5269, Ap	Sequence 1710, Ap	Sequence 49, Appl	
1-650-926-60-Sn (	US-10-187-267A-32	US-10-18	US-10-156	1 US-10-156-761-4634	t US-10-156-761-6900	56-761-2	1 US-10-156-761-2510	US-09-815-242-7755			10			•			1 US-09,-988-384B-3			_	a	O US-09-860-846-1	l US-09-988-384B-1	l US-09-836-821-1	-10-156-761-6		10-156-761-1	2 US-09-953-348-49	
88421 1(		36321 14		1458 14	1620 14				٠.	5970 12	1197 9					1248 11			13613 10			15872 10	15872 13	15872 13	1167 14	996	1092 14	1545 13	
6 4.6	8 4.5	8 4.5	6 4.5	4 4.4	4	7	4 4.3	4	2 4.3	2	4 4.2	4	4	4	4	8 4.2	4	8 4.2	4	8 4.2	6 4.1	6 4.1	6 4.1	6 4.1	7	9 4.1	8 4	8 4.1	
17 6		19 65.8							26 6							33 60.8				37 60.		39 59.					44 58.	45 58.	
	. '		••	. •	••	••	.•	••	•	O	. •	••	.,	. ,	• •	.,	•		υ	O	. •	. •	•	7	•	•	Ü	•	

ū	
-	
z	
7	
Σ	
z	
2	
<b>=</b>	
-	
•	
•	

НАСРЕНИННЕЙ В В В В В В В В В В В В В В В В В В В	NESULT  Sequence Sequ	NESULT 1  10S-09-815-242-7912  Sequence 7912 Applitcation US/09815242  Sequence 7912 Applitcation US/09815242  GENERAL INFORMATION:  APPLICANT: Haselbeer Kari L.  APPLICANT: Object, Kari L.  APPLICANT: Wall, paniel  APPLICANT: Wall, paniel  APPLICANT: Trawack, John D.  APPLICANT: Tramanco, Robert T.  APPLICANT: Yamandro, Robert T.  APPLICANT: Yamandro, Robert T.  APPLICANT: XH. Howard	INVENTION INVENTION INVENTION RENCE: EL. PPLICATIOI ILING DATI LICATION LICATION LICATION LICATION LICATION ING DATE: LICATION ING DATE:	APPLICATION N FILING DATE:	WHER OF SEQ ID NOS: 14110 OFTWARE: FastSEQ for Windows Version 4.0 O ID NO 7912 LENGTH: 1347 TYPE: DNA PSeudomonas aeruginosa FEATURE:
	SULT 1 -09-815-24 -09-815-24 -09-815-24 -09-815-24 -09-815-24 -09-815-24 -09-815-24 -09-815-24 -09-815-24 -09-815-24 -09-815-24 -09-815-24 -09-815-24 -09-815-24 -09-815-24 -09-815-24 -09-815-24 -09-815-24 -09-815-24 -09-815-24 -09-815-24 -09-815-24 -09-815-24 -09-815-24 -09-815-24 -09-815-24 -09-815-24 -09-815-24 -09-815-24 -09-815-24 -09-815-24 -09-815-24 -09-815-24 -09-815-24 -09-815-24 -09-815-24 -09-815-24 -09-815-24 -09-815-24 -09-815-24 -09-815-24 -09-815-24 -09-815-24 -09-815-24 -09-815-24 -09-815-24 -09-815-24 -09-815-24 -09-815-24 -09-815-24 -09-815-24 -09-815-24 -09-815-24 -09-815-24 -09-815-24 -09-815-24 -09-815-24 -09-815-24 -09-815-24 -09-815-24 -09-815-24 -09-815-24 -09-815-24 -09-815-24 -09-815-24 -09-815-24 -09-815-24 -09-815-24 -09-815-24 -09-815-24 -09-815-24 -09-815-24 -09-815-24 -09-815-24 -09-815-24 -09-815-24 -09-815-24 -09-815-24 -09-815-24 -09-815-24 -09-815-24 -09-815-24 -09-815-24 -09-815-24 -09-815-24 -09-815-24 -09-815-24 -09-815-24 -09-815-24 -09-815-24 -09-815-24 -09-815-24 -09-815-24 -09-815-24 -09-815-24 -09-815-24 -09-815-24 -09-815-24 -09-815-24 -09-815-24 -09-815-24 -09-815-24 -09-815-24 -09-815-24 -09-815-24 -09-815-24 -09-815-24 -09-815-24 -09-815-24 -09-815-24 -09-815-24 -09-815-24 -09-815-24 -09-815-24 -09-815-24 -09-815-24 -09-815-24 -09-815-24 -09-815-24 -09-815-24 -09-815-24 -09-815-24 -09-815-24 -09-815-24 -09-815-24 -09-815-24 -09-815-24 -09-815-24 -09-815-24 -09-815-24 -09-815-24 -09-815-24 -09-815-24 -09-815-24 -09-815-24 -09-815-24 -09-815-24 -09-815-24 -09-815-24 -09-815-24 -09-815-24 -09-815-24 -09-815-24 -09-815-24 -09-815-24 -09-815-24 -09-815-24 -09-815-24 -09-815-24 -09-815-24 -09-815-24 -09-815-24 -09-815-24 -09-815-24 -09-815-24 -09-815-24 -09-815-24 -09-815-24 -09-815-24 -09-815-24 -09-815-24 -09-815-24 -09-815-24 -09-815-24 -09-815-24 -09-815-24 -09-815-24 -09-815-24 -09-815-24 -09-815-24 -09-815-24 -09-815-24 -09-815-24 -09-815-24 -09-815-24 -09-815-24 -09-815-24 -09-815-24 -09-815-24 -09-815-24 -09-815-24 -09-815-24 -09-815-24 -09-815-24 -09-815-24 -09-	5-242- ce 791 NO. t L INFC CANT: CANT: CANT: CANT: CANT:	REFERENT NI FILL FILL FILL FILL FILL FILL FILL F	APPL FILI APPL APPL FILI APPL FILI APPL	T L & E

~

1190

1140 1250 1200 1310

1370 1260

1080

```
1261 rescesecreses erecres acaretreas and respected estates and respected reconstructions and respected respective respec
      1141 GACGCCGGCTGATTGCCCAGGCACTGGGCAACGCGGTACCGCTGGTGCGCGAACG
                                                                                                                                                                                                                                                                                                    CTGGACGAAGCAGTCCGGCAGGCCGCCGAGGTGGCCGAAGGCGATGCGGTGTG
                                                                                                                                                                                                                                                                                                                                                                                 TCCCCGCCTGCGCGAGCCTGGACATGTTCAAGAACTTCGAAGAAGCGGGACGCCTGTTC
                                                                                                                                            TTCCATGACCTGCGCGAGCCGGTCGCGCGCTTCTGCCGGGCGGTGGTACTGCTTGGCCGT
                                                                                                                                                                GACGCCGGGCTGATTGCCCAGGCACTGGGCAACGCGGTACCGCTGGTGCGCGTCGCAACG
                                                                                                                                                                                                                                                                                                                                           1201 CTGGACGAAGCAGTCCGGCAGGCCGCCGAGCTGGCCCGCGAAGGCGATGCGGTGTTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Length 1317;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ţ,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         of Essential Genes
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           .,
6
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Score 332.8; DB Pred. No. 5e-69;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    GENEKAL INFOGRATION:
GENEKAL INFOGRATION:
APPLICANT: Oblsen, Kari L.
APPLICANT: Syskind, Judith W.
APPLICANT: Wall, Daniel
APPLICANT: Wall, Daniel
APPLICANT: Trawick, John D.
APPLICANT: Trawick, John D.
APPLICANT: Trawick, John D.
APPLICANT: Trawick, John D.
APPLICANT: Yamanoto, Robert T.
APPLICANT: Yamanoto, Robert T.
APPLICANT: Wamanoto, Robert T.
APPLICANT: Su, H. Howard
TITLE OF INVENTION: Prokaryotes
FILE REFERENCE: ELITRA.011A
CURRENT APPLICATION NUMBER: 60/191,078
PRIOR FILING DATE: 2000-05-21
PRIOR APPLICATION NUMBER: 60/205,848
PRIOR FILING DATE: 2000-05-26
PRIOR FILING DATE: 2000-10-23
PRIOR FILING DATE: 2000-11-27
PRIOR APPLICATION NUMBER: 60/255,625
PRIOR FILING DATE: 2000-11-27
PRIOR FILING DATE: 2000-11-27
PRIOR FILING DATE: 2000-11-27
PRIOR FILING DATE: 2000-11-27
PRIOR FILING DATE: 2001-02-3
PRIOR FILING DATE: 2001-02-3
PRIOR FILING DATE: 2001-02-3
PRIOR FILING DATE: 2001-02-16
NUMBER OF SEQ ID NOS: 14110
SOFTWARE: FastSEQ for Windows Version 4.0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 1321 GCCAAAGCCGTAGAGGAGCTAGCGTGA 1347
                                                                                                                                                                                                                                                                                                                                                                                                                                                               1371 GCCAAAGCCGTAGAGGAGCTAGCGTGA 1397
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Sequence 9978, Application US/09815242 Patent No. US20020061569A1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         23.0%;
56.1%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ORGANISM: Salmonella typhi
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ; LOCATION: (1)...(1317)
US-09-815-242-9978
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Query Match
Best Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  US-09-815-242-9978
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  LENGTH: 1317
                          961
                                                               1071
                                                                                                                                            1131
                                                                                                                                                                                   1081
                                                                                                                                                                                                                        1191
                                                                                                                                                                                                                                                                                                      1251
                                                                                                                                                                                                                                                                                                                                                                                   1311
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         DNA
                                                                                                     셤
                                                                                                                                                                             g
                                                                                                                                                                                                                                                         g
                                                                                                                                                                                                                                                                                                    ö
                                                                                                                                                                                                                                                                                                                                           셤
                                                                                                                                                                                                                                                                                                                                                                                                                    셤
                                                               à
                                                                                                                                   ŏ
                                                                                                                                                                                                                        à
                                                                                                                                                                                                                                                                                                                                                                                   à
                                                                                                                                                                                                                                                                                                                                                                                                                                                             ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  a
                                                                                                                         ö
                                                                                                                                                              110
                                                                                                                                                                                                                                           170
                                                                                                                                                                                                                                                                              120
                                                                                                                                                                                                                                                                                                                       230
                                                                                                                                                                                                                                                                                                                                                                                                   290
                                                                                                                                                                                                                                                                                                                                                                                                                                          240
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 350
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            410
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 420
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             AAGGCGTTTTCCGGCCTGGCTCATCGCTGCCAGTGGGTACGCGAGCGGCAGGGCGTGAGC 1010
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         TACTACGACGATTCCAAGGCCACCAACGTCGGCGCCCCTGGCGGCGATCGAGGGGCTG 1070
                                                                                                                                                                                                                                                                                                                                                              180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       300
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   360
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          470
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  540
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 650
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   590
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      900
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              830
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   950
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           GCCAAGCACCGGATCTTCCGCGGTGCCCGCCAGGTCGTGGTGAATCGCGCCGATGCCCTG 710
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ACCCGACCGCTGATCGCCGATACCGTGCTGCTGGTCGTTCGGCCTGAACAAGCCGGAC 770
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            780
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    890
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             840
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          900
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      960
                                                                                                                                                                                                   9
                                                                                                                                                          TCCCTGGTGCGCTACCTGGCGCGCGCGCGTTTCGCCGTGGTCGATACCCGAGAG
                                                                                                                                                                                                                                                                                                                                         GAACTCGACGCCGAGTTCCTCTGCTCCGCCGCGAACTCTATGTCAGCCCCGGCTTGTCG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                             CTGCGCACCCCTGCGTGGTACAGGCCGCGCGAAAGGCGTGCGCATCTCCGGTGACATC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    GTGCTGAACGTCAGCGAAGACCATATGGATCGCTACGACGGCATGGCTGACTACCACCTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    AACCGGCGGAGCTGGCCACCTGCGTGCCAGTATCCGCAGGTGGAAGTGCGTTGCGGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 TTGGAGCTGTCGAGCTTCCAGCTGGAAACCTGCGATCGCCTCAACGCCGAGGTGGCGACC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              AAGCTGCTGCCGGTTGGCGAACTGAAGATCCGTGGCGCCCACAACTATTCCAACGCGCTC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Gaps
                                                                                                                         ö
                                                                                  Length 1347;
                                                                                                                       Indels
                                                                              Query Match 92.9%; Score 1347; DB 9; I
Best Local Similarity 100.0%; Pred. No. 7.2e-307;
Matches 1347; Conservative 0; Mismatches 0;
                        ...(1347)
; NAME/KEY: CDS
; LOCATION: (1)..
US-09-815-242-7912
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              531
                                                                                                                                                                                               Н
                                                                                                                                                                                                                                                                                                                   171
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 301
                                                                                                                                                              21
                                                                                                                                                                                                                                        111
                                                                                                                                                                                                                                                                            61
                                                                                                                                                                                                                                                                                                                                                          121
                                                                                                                                                                                                                                                                                                                                                                                               231
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          351
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         721
                                                                                                                                                                                                                                                                                                                                                                                                                                      181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                             291
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      481
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             591
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       711
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               661
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      771
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      841
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  541
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         651
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                601
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    831
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       781
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             951
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         1011
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                891
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  901
                                                                                                                                                                                               엄
                                                                                                                                                                                                                                        ò
                                                                                                                                                                                                                                                                            윱
                                                                                                                                                                                                                                                                                                                   ò
                                                                                                                                                                                                                                                                                                                                                        g
                                                                                                                                                                                                                                                                                                                                                                                               ò
                                                                                                                                                                                                                                                                                                                                                                                                                                    셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         임
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       셤
                                                                                                                                                              ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            g
```

m

1205

```
380 GATCGTCGCCATCACCGGTTCCAACGCGAAGAGCACCGTGACCACCTGGTGGGCGAAAT 439
                1146 GAGCCGGTCGCGCGCTTCTGCCGGGCGGTGGTACTGCTTGGCCGTGACGCCGGGCTGATT
                                                                                       GCCGCACTGC ----GTCCGGAAATCGCCCAACAGACTGAGAGAGGAAGAGGGGATG
                                                                                                                              CGGCAGGCCGCCGAGCTGCCCGCGAAGGCGATGCGGTGCTGTTGTCGCCGGCCTGCGCG
                                                                                                                                                                                    AGCCTGGACATGTTCAAGAACTTCGAAGAACGCGGACGCCTGTTCGCCAAAGCCGTAGAG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            140 CTTGCCTTTCGCCGTGGTCGATACCCGAGAACCCGCGGAGCTGGCCACCCTGCGTGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            200 CCAGTATCCGCAGGTGGAAGTGCGTTGCGGCGAACTCGACGCCGAGTTCCTCTGCTCCGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  260 CCGCGAACTCTATGTCAGCCCCGGCTTGTCGCTGCGCACCCCTGCGCTGGTACAGGCCGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     CGCGAAAGGCGTGCGCATCTCCGGTGACATCGATCTTTCGCCCGCGAGGCGAAGGCCCC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               TGATGCCGGAATCGAAATCGTTGGCGATATCGAGCTGTTCTGTCGCGAAGCACAAGCACC
                                80 CATCGTTGTCGGCCTCGGCAAGAGCGGCATGTCCCTGGTGCGCGCTACCTGGCGCGCCGCGG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              -----AAGCCGTAGAACGCCACACGGGCAGTCTGAATGATGATGGCTGATGGCGGC
                                                                       GCCCAGGCACTGGGCAACGCGGTACCGCTGGTGCGCGCCAACGCTGGACGAAGCAGTC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                TGTGACGCCGCGCGTTATGGATACGCGTATGACACCGCCTGGCCTGGATAAATTACCCG-
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Length 1317
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Score 278.6; DB 9;
Pred. No. 2.6e-56;
); Mismatches 579;
                                                                                                                                                                                                                                                                                                                                                                                 APPLICANT: Forsyth, R. Allyn
APPLICANT: Ohlsen, Kari L.
APPLICANT: Zyskind, Judith W.
TITLE OF INVENTION: Genes identified as required
TITLE OF INVENTION: proliferation of E. coli
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           4.0
                                                                                                                                                                                                                                                                                                                                                                                                                                                     FILE REFERENCE: ELITFA.009A
CURRENT APPLICATION NUMBER: US/09/741,669
CURRENT FILING DATE: 2000-12-19
PRIOR APPLICATION NUMBER: US 60/173005
PRIOR FILING DATE: 1999-12-23
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            NUMBER OF SEQ ID NOS: 481
SOFTWARE: FastSEQ for Windows Version
                                                                                                                                                                                                                                                                                                                                             US/09741669
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     19.2%;
                                                                                                                                                                                                                                           GAGCTAGCGTGA 1397
                                                                                                                                                                                                                                                                      1306 GAGTTAGGTTGA 1317
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ORGANISM: Escherichia coli
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Query Match 19.2
Best Local Similarity 53.7
Matches 709; Conservative
                                                                                                                                                                                                                                                                                                                                            Sequence 259, Application Patent No. US20020022718A1 GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          (1317)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              NAME/KEY: CDS
LOCATION: (1)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ; LOCATION: (1)
US-09-741-669-259
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          SEQ ID NO 259
                                                                                                 1132
                                                                                                                              1266
                                                                                                                                                        1186
                                                                                                                                                                                    1326
                                                                                                                                                                                                                                           1386
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       TYPE: DNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            δλ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ò
                                      9
                                                                     ò
                                                                                           g
                                                                                                                      οy
                                                                                                                                                       g
                                                                                                                                                                                    ò
                                                                                                                                                                                                           g
                                                                                                                                                                                                                                          ò
                                                                                                                                                                                                                                                                 g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         δŻ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              AAGGCCACCAACGTCGCCGCCCCTGGCGGCGATCGAGGGGCTGGGTGCCGACATCGAC 1085
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        GGCAAGCTGGTGCTGCTCGCCGGCGGAGACGGCAAGGGCGCCGATTTCCATGACCTGCGC 1145
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       CTGGCTCATCGCTGCCAGTGGGTACGCGAGCGGCGAGGGCGTGAGCTACGACGATTCC 1025
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          AAAGCGACCAATGTCGGCAGTACCGAAGCGGCGCTAAAACGGTTTGCATG-----TGGAC 1011
 S;
                                                                                                                                                                                                                                                                                                           486
                                                                                                                                                        426
                                                                                                                                                                                                                                                                                                                                                                                                                             548
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               546
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           665
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       909
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              999
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          785
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     717
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               CTGATCGAGGAAGAGGCCAGAAGTGGCTGGCGTTCCAGTTCGACAAGCTGCTGCCGGTT 845
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            GACCACTTCCGCATCGTTGTCGGCCTCGGCAAGAGCGGCATGTCCCTGGTGCGCTACCTG 128
                                                                                                                                                                                                                           CTCTTAGCGGCGGATTTAATCGTCGCCAGCCCTGGTATTGCTCTGGCGCGCATCCCTCTT 246
                                                                                                                                                                                                                                                       GTACAGGCCGCCGCGAAAGGCGTGCGCATCTCCGGTGACATCGATCTTTCGCCCGCGAG 368
                                                                                                                                                                                                                                                                         AGCGCTGCCGCCGCTGGAGTGGAATTGTCGCGGAATTGTCGAACTGTTTTGCCGCAA 306
                                                                                                                                                                                                                                                                                                                                                                     GTGGCCGAAATGGCGGTGGCCGCGGACAAGCGTGTCGCCGTCGGCGGCAACCTCGGCACC 488
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    608
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                TTCCGCGGTGCCCGCCAGGTCGTGGTGAATCGCGCCGATGCCCTGACCCGACCGCTGATC 725
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      GGCGAACTGAAGATCCGTGGCGCCCACAACTATTCCAACGCGCTCGCCGCGCTGGCGCTG 905
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 778 AAAGAGATGAAGCTTTCCGGTCAGCATAACTATACCAATGCGTTAGCGGCGCTGGCGCTG 837
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               GGCCATGCGGTCGGCCTGCCGTTCGACGCCATGCTCGGCGCGCTGAAGGCGTTTTCCGGC 965
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          CTTAATCGTCAGCAGGCGAAACCTGGCTACGAGTCAAAGGTGAGAAGGTGCTGAACGTG 777
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   CTCGCCCCCCCCCCCCCCCCCCCGGTGATGGATACTCGCGTGACGCCCCCCGGGTCTGGAT
                                                                                                                                                                                                CTCTGCTCCGCCCGCGAACTCTATGTCAGCCCCGGCTTGTCGCTGCGCACCCCTGCGCTG
                                                                                                                                                                                                                                                                                                                                                                                       GCCGATACCGTGCCGTGCTCGTTCGGCCTGAACAAGCCGGACTTCAAGGCTTTCGGC
                                                                                   GCGCGCCGCGCCTTCGCCGTGGTCGATACCCGAGAGCCCGCCGGAGCTGGCC
                                                                                                                                         ACCCTGCGTGCCCAGTATCCGCAGGTGGAAGTGCGTTGCGGCGAACTCGACGCCGAGTTC
                                                                                                                                                                                                                                                                                                                                                                                                                            CCGCCCCTCCACCTGCTGCCGACGACGACGAGCTGTACGTGTTGGAGCTGTCGAGCTTC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   CAGCTGGAAACCTGCGATCGCCTCAACGCCGAGGTGGCGACCGTGCTGAACGTCAGCGAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           GACCATATGGATCGCTA---CGACGGCATGGCTGACTACCACCTGGCCAAGCACCGGATC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  GACAAAAACGTCGTCATTATCGGTCTGGGCTTAACCGGACTCTTTGCGTGGACTTTTTT
  Gaps
 33;
 Indels
 552;
 Mismatches
ó
 Conservative
747;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1026
                                                                                                                                                                    136
                                                                                                                                                                                                                                                      309
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          718
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  868
                            69
                                                                                                                                        189
                                                                                                                                                                                                249
                                                                                                                                                                                                                           187
                                                                                                                                                                                                                                                                                  247
                                                                                                                                                                                                                                                                                                            369
                                                                                                                                                                                                                                                                                                                                         307
                                                                                                                                                                                                                                                                                                                                                                     429
                                                                                                                                                                                                                                                                                                                                                                                              367
                                                                                                                                                                                                                                                                                                                                                                                                                            489
                                                                                                                                                                                                                                                                                                                                                                                                                                                      427
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   549
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               487
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         609
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    547
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                999
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            607
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         726
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   299
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               984
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         838
 Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          요
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          g
                                                                                                         g
                                                                                                                                        ŏ
                                                                                                                                                                   g
                                                                                                                                                                                             à
                                                                                                                                                                                                                      셤
                                                                                                                                                                                                                                                      ò
                                                                                                                                                                                                                                                                          .
D
                                                                                                                                                                                                                                                                                                     9.
O.
                                                                                                                                                                                                                                                                                                                                                         S S
                                                                                                                                                                                                                                                                                                                                                                                                                         ₽ Q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                          δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ŏ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          οy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             õ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ŏ
                            ŏ
                                                                                   ò
```

ŝ

199 145 259

86

319

257

197

379

```
ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ద
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 CGTCGGCGCCCCCTGGCGGCGATCGAGGGGCTGGGTGCCGACATCGACGGCAAGCTGGT 1096
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             1023 ITTGTIGCIGGGIGGCGAIGGIAAAICGGCGGGACTITAGCCCACIGGCGCGTACCIGAA 1082
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 1316
                                                                                                                                                                                                                                                                                                                                                                                                                                      CTGCCAGTGGGTACGCGAGGGCAGGGCGTGAGCTACTACGACGATTCCAAGGCCACCAA 1036
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      CGTCGGCAGTACGGAAGCGGCGCTGAATGGCCTG----CACGTAGACGGCACACTGCA 1022
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             GCTGCTCGCCGGCGGAGACGGCAAGGGCCCGATTTCCATGACCTGCGCGAGCCGGTCGC 1156
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   1217 GGGCAACGCGGTACCGCTGGTGCGCTCGCAACGCTGGACGAAGCAGTCCGGCAGGCCGC 1276
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           619
                                                                                                                                                                     9/9
                                                                                                                                                                                          617
                                                                                                                                                                                                                                                            196
                                                                                                                                                                                                                                                                                                                                                  916
                                                                                                                                                                                                                                                                                                                                                                                              916
                                                CCGCCAGGTCGTGGAATCGCGCCGATGCCCTGACCCGACCGCTGATCGCCGATACCGT 736
                                                                                                                                                                                                                                      677
                                                                                                                                                                                                                                                                                                                    ACTITCCGGCCAGCATAACIACACCAATGCGCTGGCGGCGCTGGCGCTGGCAGATGCTGC 848
                                                                                                                                                                                                                                                                       1157 GCGCTTCTGCCGGGCGGTGGTACTGCTTGGCCGTGACGCCGGGCTGATTGCCCCAGGCACT
                                                                           500 CCTGCTGGCCGACGACATCGAGCTGTACGTGGAGCTGTCGAGCTTCCAGCTGGAAAC
                                                                                                                                                                  620 TCGCTA----CGACGCCATGGCTGACTACCACCTGGCCAAGCACCGGGATCTTCCGCGGTGC
                                                                                                                                                                                                                                   GAAAGTTTGCGTGGTTAATGCTGATGATGCCTTAACAATGCCGATTCGCGGTGCGGATGA
                                                                                                                                                                                                                                                           GCCGTGCTGGTCGTTCGGCCTGAACAAGCCGGACTTCAAGGCTTTCGGCCTGATCGAGGA
                                                                                                                                                                                                                                                                                                                                                                                            CGGCCTGCCGTTCGACGCCATGCTCGGCGCGCTGAAGGCGTTTTCCGGCCTGGCTCATCG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  -----GCCCGGAAGTGGCAGAACAAACTATGGAACAGGCGATGCGCTTGCTGGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             1277 CGAGCTGGCCGCGGAGGCGATGCGGTGCTGTTGTCGCCGGCCTGCGCGGGCCTGGACAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         GTTCAAGAACTTCGAAGAACGCGGACGCTGTTCGCCAAAGCCGTAGAGGAGCTAGCGTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        GGCGGTGGCCGCGGACAAGCGTGGCCGTCGGCGGCAACCTCGGCACCCCGGCGCGCTCGA
                                                                                                                        CTGCGATCGCCTCAACGCCGAGGTGGCGACCGTGCTGAACGTCAGCGAAGACCATATGGA
                                                                                                                                                                                   AGACGCCAGAAGTGGCTGGCGTTCCAGTTCGACAAGCTGCTGCCGGTTGGCGAACTGAA
                                                                                                                                                                                                                                                                                                                                                 CTTTGAAGTTGTGCTGGAGCATAACGGCGTACGTTGGATTAACGATTCGAAAGCGACCAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     A 1397
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         A 1317
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 1037
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            1097
                                440
                                                                                                 438
                                                                                                                        260
                                                                                                                                             498
                                                                                                                                                                                                              677
                                                                                                                                                                                                                                     618
                                                                                                                                                                                                                                                                                                    797
                                                                                                                                                                                                                                                                                                                           729
                                                                                                                                                                                                                                                                                                                                                  857
                                                                                                                                                                                                                                                                                                                                                                                            917
                                                                                                                                                                                                                                                                                                                                                                                                                                      977
                                                                                                                                                                                                                                                                                                                                                                                                                                                          606
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      696
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1257
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         1142
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         1337
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         1317
                                                                                                                                                                                                                                                           737
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    1397
                                                     셤
                                                                           ò
                                                                                                셤
                                                                                                                       ò
                                                                                                                                         g
                                                                                                                                                                  ö
                                                                                                                                                                                      g
                                                                                                                                                                                                             ò
                                                                                                                                                                                                                                g
                                                                                                                                                                                                                                                         à
                                                                                                                                                                                                                                                                            g
                                                                                                                                                                                                                                                                                                    ö
                                                                                                                                                                                                                                                                                                                        g
                                                                                                                                                                                                                                                                                                                                              õ
                                                                                                                                                                                                                                                                                                                                                                 g
                                                                                                                                                                                                                                                                                                                                                                                      ò
                                                                                                                                                                                                                                                                                                                                                                                                             g
                                                                                                                                                                                                                                                                                                                                                                                                                                                       g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              g
                               ò
                                                                                                                                                                                                                                                                                                                                                                                                                                      ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       엄
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         쉽
```

```
ι.
..
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       197
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 379
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            259
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           319
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  317
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   140 CTTGCCTTTCGCCGTGGTCGATACCCGAGAACCCGCCGGAGCTGGCCACCCTGCGTGC 199
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   87 TGTGACGCCGCGCGTTATGGATACGCGTATGACACCGCCTGGCCTGGATAAATTACCCG- 145
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              257
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         440 GGCGGTGGCCGCGGACAAGCGTGTCGCCGTCGGCGAACCTCGGCACCCCGGCGCGCTCGA 499
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             86
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    146 -----AAGCCGTAGAACGCCACACGGGCAGTCTGAATGATTGGCTGATGGCGGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               258 TGATGCCGGAATCGAAATCGTTGGCGATATCGAGCTGTTCTGTCGCGAAGCACAAGCACC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     GATCGTCGCCATCACCGGTTCCAACGCGAAGAGCACCGTGACCACCCTGGTGGGCGAAAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   cercarrarcesceresecereacesserrarcersesresarrarecreseres
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       200 CCAGTATCCGCAGGTGGAAGTGCGTTGCGGCGAACTCGACGCCGAGTTCCTCTCTGCTCCGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           260 CCGCGAACTCTATGTCAGCCCCGGCTTGTCGCTGCGCACCCCTGCGCTGGTACAGGCCGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           CGCGAAAGGCGTGCGCATCTCCGGTGACATCGATCTTTCGCCCGCGGGGGGGAAGGCCCC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Length 1317;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Indels
                                                                                                                                                                                                    APPLICANT: ITAMACA, JOHN D.
APPLICANT: Amamoto, Robert T.
APPLICANT: Yamamoto, Robert T.
APPLICANT: Xu, H. Howard
TITLE CART, CART, Grant J.
TITLE OF INVENTION: Identification of Essential Genes in
TITLE OF INVENTION: Prokaryotes.
FILE REFERENCE: ELITRA.011A
CURRENT APPLICATION NUMBER: 60/191,078
PRIOR APPLICATION NUMBER: 60/191,078
PRIOR FILING DATE: 2000-03-21
PRIOR APPLICATION NUMBER: 60/206,848
PRIOR FILING DATE: 2000-05-23
PRIOR FILING DATE: 2000-05-23
PRIOR FILING DATE: 2000-05-36
PRIOR APPLICATION NUMBER: 60/207,727
PRIOR FILING DATE: 2000-11-27
PRIOR PRILING DATE: 2000-11-27
PRIOR FILING DATE: 2000-11-27
PRIOR FILING DATE: 2000-11-27
PRIOR FILING DATE: 2000-12-22
PRIOR FILING DATE: 2001-12-22
                                                                                                                                                                                                                                                                                             ļ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           DB 9;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Score 278.6; DB 9;
Pred. No. 2.6e-56;
0; Mismatches 579;
Sequence 5932, Application US/09815242
Patent No. US20020061569A1
GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        NUMBER OF SEQ ID NOS: 14110
SOFTWARE: FastSEQ for Windows Version
SEQ ID NO 5932
LENGTH: 1317
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Query Match 19.2%;
Best Local Similarity 53.7%;
Matches 709; Conservative (
                                                                                                           APPLICANT: Ohlsen, Kari L.
APPLICANT: Syskind, Judith W.
APPLICANT: Wall, Daniel
APPLICANT: Trawick, John D.
                                                                                   APPLICANT: Haselbeck, Robert
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               TYPE: DNA ORGANISM: Escherichia coli
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             (1317)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ; LOCATION: (1).
US-09-815-242-5932
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                27
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 320
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     380
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ò
```

S

Page

```
q
                                                                                                                                                                                                                                                                                                                                                                  셤
                                                                                                                                                                                                                                                                                                                                                                                                                   셤
                                                                                                                                                                                                                                                                                                                                                                                                                                            δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                     셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               οy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ö
                                                                                                                                                                                                                                                                                                                                                                                            οy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ò
                                                                                                                                                                                                                                                                                                                                                                                                        1036
                                                                                                                                                                                                                                                                                                                                                                                                                                                                     856
                                                                                                                                                                                                                                                                                                      916
                                                                                                                                                                                                                                                                                                                             848
                                                                                                                                                                                                                                                                                                                                                      916
                                                 619
                                                                         557
                                                                                                   919
                                                                                                                           617
                                                                                                                                                   736
                                                                                                                                                                            677
                                                                                                                                                                                                   196
                                                                                                                                                                                                                                                                             788
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         GTTCAAGAACTTCGAAGAACGCGGACGCCTGTTCGCCAAAGCCGTAGAGGAGCTAGCGTG
                                                                                                                                                                         GAAAGTTTGCGTGGTTAATGCTGATGATGCCTTAACAATGCCGATTCGCGGTGCGGATGA
                                                                                                                                                                                                                          ACGCTGCGTCAGCTTTGGCGTCAACATGGGTGACTATCA-------CCTGAATCATCA
                                                                                                                                                                                                                                                                                                                  ACTITCGGGCAGCATAACTACACCAATGCGCTGGGGGGGCGCTGGCCAGATGCTGC
                                                                                                                                                                                                                                                                                                                                                                                                      CTGCCAGTGGGTACGCGAGGGCAGGGCGTGAGCTACGACGATTCCAAGGCCACCAA
                                                                                                                                                                                                                                                                                                                                                                                                                               CTTTGAAGTTGTGCTGGAGCATAACGGCGTACGTTGGATTAACGATTCGAAAGCGACCAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                1023 TITGTIGCIGGGGGGGATGGIAAATCGGCGGACTITAGCCCCACTGGCGCGTTACCTGAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         GGGCAACGCGGTACCGCTGGTGCGCGTCGCAACGCTGGACGAAGCAGTCCGGCAGGCCGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             CGAGCTGGCCCGCGAAGGCGGTGCGGTGTTGTCGCCGGCCTGCGCGAGCCTGGACAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          CCTGCTGGCCGACGACATCGAGCTGTACGTGTTGGAGCTGTCGAGCTTCCAGCTGGAAAC
                                                                        CACCTCCAGCTTACAGGCGGTAGCAGCGACCATTCTGAACGTGACTGAAGATCATATGGA
                                                                                                 TCGCTA----CGACGCCATGGCTGACTACCACCTGGCCAAGCACCGGATCTTCCGCGGTGC
                                                                                                                        558 receratecetitegetitacaacagtategegegaaaactgegegatitacgaaaacge
                                                                                                                                                 CCGCCAGGTCGTGGTGAATCGCCGCGATGCCCTGACCCGGACCGCTGATCGCCGATACCGT
                                                                                                                                                                                                   GCCGTGCTGGTCGTTCGGCCTGAACAAGCCGGACTTCAAGGCTTTCGGCCTGATCGAGGA
                                                                                                                                                                                                                                                   AGACGGCCAGAAGTGGCTTGCCAGTTCGACAAGCTGCTGCCGGTTGGCGAACTGAA
                                                                                                                                                                                                                                                                            GCAGGGCGAAACCTGGCTGCGGGTTAAAGGCGAGAAGTGCTGAATGTGAAAGAGATGAA
                                                                                                                                                                                                                                                                                                    GATCCGTGGCGCCCACACTATTCCAACGCGCTCGCCGCGCTGGCGCTGGGGCCATGCGGT
                                                                                                                                                                                                                                                                                                                                                     CGGCCTGCCGTTCGACGCCATGCTCGGCGCGCTGAAGGCGTTTTCCGGCCTGGCTCATCG
                                                                                                                                                                                                                                                                                                                                                                              849 AGGGTTACCGCGTGCCAGCAGCCTGAAAGCGTTAACCACATTCACTGGTCTGCCGCATCG
                                                                                                                                                                                                                                                                                                                                                                                                                                                      CGTCGGCGCCCCTGGCGGCGATCGAGGGCTGGCTGCCGACATCGACGGCAAGCTGGT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        GCTGCTCGCCGGCGGAGACGGCAAGGGCGCCGATTTCCATGACCTGCGCGAGCCGGTCGC
             CTGCGATCGCCTCAACGCCGAGGTGGCGACCGTGCTGAACGTCAGCGAAGACCATATGGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        GCGCTTCTGCCGGCGGTGGTACTGCTTGGCCGTGACGCCGGGCTGATTGCCCAGGCACT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ----GCCCGGAAGTGGCAGAACAAACCGAAACTATGGAACAGGCGATGCGCTTGCTGGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               A 1397
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        A 1317
                                                                                                                                                                                                                                                                                                                                                                                                      977
                                                                                                                                                                                                                                                                                                                                                                                                                               606
                                                                                                                                                                                                                                                                                                                                                                                                                                                      1037
                                                                                                                                                                                                                                                                                                                                                                                                                                                                               696
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1097
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        1157
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         1217
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             1337
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      1257
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               1397
200
                                                260
                                                                      498
                                                                                               620
                                                                                                                                                 677
                                                                                                                                                                         618
                                                                                                                                                                                                  737
                                                                                                                                                                                                                          678
                                                                                                                                                                                                                                                 797
                                                                                                                                                                                                                                                                          729
                                                                                                                                                                                                                                                                                                   857
                                                                                                                                                                                                                                                                                                                            789
                                                                                                                                                                                                                                                                                                                                                     917
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  1142
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        1317
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      දු
                                                                    q
                                                                                               ò
                                                                                                                        g
                                                                                                                                                ö
                                                                                                                                                                    ద
                                                                                                                                                                                                 à
                                                                                                                                                                                                                    g
                                                                                                                                                                                                                                             ò
                                                                                                                                                                                                                                                                          셤
                                                                                                                                                                                                                                                                                                   ò
                                                                                                                                                                                                                                                                                                                        g
                                                                                                                                                                                                                                                                                                                                                    ŏ
                                                                                                                                                                                                                                                                                                                                                                          g
                                                                                                                                                                                                                                                                                                                                                                                                    ò
                                                                                                                                                                                                                                                                                                                                                                                                                         g
                                                                                                                                                                                                                                                                                                                                                                                                                                                     å
                                                                                                                                                                                                                                                                                                                                                                                                                                                                         g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ŏ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ŏ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ద
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               δ
à
                                                ð
```

Sequence 1, Application US/10156761 Publication No. US20030119018A1 GENERAL INFORMATION:

US-10-156-761-1

RESULT

APPLICANT: OMURA, SATOSHI APPLICANT: IKEDA, HARUO

```
7361094
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       7361095 CGAGCTCATCGTCACCACCCGGCTGGCAGCCGGACAAGCCGCTGTTCGCCGCGGCCGC 7361154
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           7361274
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ;
9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        319
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           139
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               199
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           544
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      664
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                604
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 751
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               491 GGCGCTCGACCTGCTGGCCGACGA-----CATCGAGCTGTACGTGTTGGAGCTGTCGAG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                545 CTTCCAGCTGGAAACCTGCGATCGCCTCAACGCCGAGGTGGCGACCGTGCTGAACGTCAG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 CTTGCCTTTCGCCGTGGTCGATACCCGAGAGAACCCGCCGGAGCTGGCCACCCTGCGTGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        CCGCGAACTCTATGTCAGCCCCGGCTTGTCGCTGCGCACCCCTGCGCTGGTACAGGCCGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            CGCGAAAGGCGTGCGCATCTCCGGTGACATCGATCTTTCGCCCGCGAG------GC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                371 GAAGGCCCCGATCGTCGCCATCACCGGTTCCAACGCGAAGAGCACCGTGACCACCTGGT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     GGGCGAAATGGCGGTGGCCGCGGACAAGCGTGTCGCCGTCGGCGGCAACCTCGGCACCCC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      605 GGAAGACCATATGGATCGCTACGACGGCATGGCTGACTACCACCTGGCCAAGCACCGGAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           CT-------TCCGCGGTGCCCGCCAGTCGTGGTGAATCGCGCCGATGCCCT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     CCAGTATCCGCAGGTGGAAGTGCGTTGCGGCGAACTCGACGCCGAGTTCCTCTGCTCCGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                         57; Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                        DB 14; Length 9025608;
                                                                                                                                                                                                                                                                                                                                                                                                                                                          Indels
                                                                                                                                                                                                                                                                                                                                                                                                                      Score 180.6; DB 14;
Pred. No. 1.6e-33;
0; Mismatches 649;
                                                                                                                                                                                                                                                                                                                                                                      other or unknown
                           APPLICANT: SHIEA, TADAYOSHI
APPLICANT: SARAKI, YOSHTYUKI
APPLICANT: SARAKI, YOSHTYUKI
APPLICANT: ASABHIRA
TITLE OF INVENTION: NOVEL POLKNUCLEOTIDES
FILE REFERENCE: 249-262
CURRENT APPLICATION NUMBER: US/10/156,761
CURRENT APPLICATION NUMBER: JP 2001-204089
PRIOR APPLICATION NUMBER: JP 2001-204089
PRIOR APPLICATION NUMBER: JP 2001-272697
PRIOR FILING DATE: 2001-08-02
NUMBER OF SEQ ID NOS: 15109
                                                                                                                                                                                                                                                                                               ORGANISM: Streptomyces avermitilis
                                                                                                                                                                                                                                                                                                                                                                      ģ
                                                                                                                                                                                                                                                                                                                                                                                                                        12.5%;
ISHIKAWA, JUN
HORIKAWA, HIROSHI
                                                                                                                                                                                                                                                                                                                                                                    OTHER INFORMATION: a, t, C,
                                                                                                                                                                                                                                                                                                                                                                                                                                                         Matches 687; Conservative
                                                                                                                                                                                                                                                                                                                                  NAME/KEY: misc_feature
LOCATION: (4187715)
                                                                                                                                                                                                                                                                                                                                                                                                                                      Best Local Similarity
                                                                                                                                                                                                                                                              9025608
                                                                                                                                                                                                                                                                                                                                                                                   US-10-156-761-1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 140
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   200
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        260
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            320
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     431
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           999
                                                                                                                                                                                                                                             SEQ ID NO 1
                                                                                                                                                                                                                                                                                TYPE: DNA
                                                                                                                                                                                                                                                                                                                                                                                                                         Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ð
```

셤

ò g

g à 임

ò

g

à 셤 ò q ò g ð 8

Š

```
199
                                                                                                                                                                                                                                                                                                                               CGCGGTCGTCACGGTCGTCAACGACGCGACGACGACGACGCTCCCGGGCCCAGGCCGCGGA 146
                                                                                                                                                                                                                                                                                                                                                                  259
                                                                                                                                                                                                                                                                                                                                                                                                  206
                                                                                                                                                                                                                                                                                                                                                                                                                                     319
                                                                                                                                                                                                                                                                                                                                                                                                                                                                      266
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       370
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          326
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            430
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             386
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                490
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 446
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  506
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   544
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       604
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      566
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         664
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           626
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                709
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               989
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    687 GGTGCGCGCGCGGACGTCGAGGAGGCTGCCGGCCGTCGGCTTCACGCTGGGCACGCC 746
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       811
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        806
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          871
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             998
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 751
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  86
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              CAACTATTCCAACGCGCTCGCCGCGCTGGCGCTTGCGGTCGGCCTGCCGTTCGA 931
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  CTTCCAGCTGGAAACCTGCGATCGCCTCAACGCCGAGGTGGCGACCGTGCTGAACGTCAG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           27 CACCGTCGCCGGGCTCTCCGGTATCCCGGCGCGCCCGCGTGCTGCACGCCTCCGG
                                                                                                                                                                                                                                                                                              140 CTTGCCTTTCGCCGTGGTCGATACCCGAGAGAACCCGGCGGAGCTGGCCACCCTGCGTGC
                                                                                                                                                                                                                                                                                                                                                                   CCAGTATCCGCAGGTGGAAGTGCGTTGCGGCGAACTCGACGCCGAGTTCCTCTGCTCCGC
                                                                                                                                                                                                                                                                                                                                                                                                  TCTGGAGGCGCTCGGCATCACCGTGCGCCTCGGTGACGGCGCGACCCTGCCCGAGGGCAC
                                                                                                                                                                                                                                                                                                                                                                                                                                     260 CCGCGAACTCTATGTCAGCCCCGGCTTGTCGCTGCGCACCCCTGCGCTGGTACAGGCCGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                           CGCGAAAGGCGTGCGCATCTCCGGTGACATCGATCTTCGCCCGCGAG-----GC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           267 CGAGGCGGCCGTCCCGGTCTGGGGCGACGTCGAACTCGCCTGGCGGCTGCGCGGCCCCGG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            GAAGGCCCCGATCGTCGCCATCACCGGTTCCAACGCGAAGAGCACCGTGACCACCCTGGT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             327 ATCCGCGCCCTGGCTCGCCGTCACGGGCACCAAGGCCACGACGACGTGCAGATGCT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                GGGCGAAATGGCGGTGGCCGCGGGACAAGCGTGTCGCCGTCGGCGGCGCAACCTCGGCACCCCC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   GGCGCTCGACCTGCTGCCCGACGA-----CATCGAGCTGTACGTGTTGGAGCTGTCGAG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       605 CGAAGACCATATGGATCGCTACGACGCCATGGCTGACTACCACCTGGCCAAGCACCGGAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             -----GCCGATACCGTGCCGTGCTGGTCGTT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       CGGCCTGAACAAGCCGGACTTCAAGGCTTTCGGCCTGATCGAGGAAGACGCCAGAAGTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        747 CGGACCGTCCCAACTCGGCGTCGTGGAGGGCATTCTGGTCGACCGCGCCTTCGTCGAGGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            812 GCTGGCGTTCCAGTTCGACAAGCTGCTGCCGGTTGGCGAACTGAAGATCCGTGGCGCCCA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ccescagaagaaceccageaecresceaagarescegacerecarececcesceaa
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                CT--------TCCGCGGTGCCCGCCAGGTCGTGAATCGCGCCGATGCCCT
                                                                                                                                                       Length 1401;
                                                                                                                                                                                          57;
                                                                                                                                                                                          Indels
                                                                                                                                                         DB 14;
                                                                                                                                                       12.4%; Score 180.2; DB 14;
llarity 49.6%; Pred. No. 3.1e-33;
Conservative 0; Mismatches 628;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   GACCCGACCGCTGATC-----
                                TYPE: DNA
ORGANISM: Streptomyces avermitilis
FEATURE:
                                                                                                  ; LOCATION: (1)..(1401)
US-10-156-761-6097
                                                                                                                                                                         Similarity
                                                                                   NAME/KEY: CDS
              : 1401
NO 6097
                                                                                                                                                                                          674;
                                                                                                                                                       Query Match
Best Local S
Matches 674
                                                                                                                                                                                                                                                                                                                                                                                                  147
                                                                                                                                                                                                                                                                                                                                 87
                                                                                                                                                                                                                                                                                                                                                                  200
                                                                                                                                                                                                                                                                                                                                                                                                                                                                        207
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         320
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            371
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   491
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       545
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 627
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                431
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 387
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    447
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      507
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                999
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   710
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       752
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             807
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              872
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 867
              LENGTH
SEQ ID
                                                                                                                                                                                                                                                           셤
                                                                                                                                                                                                                                                                                                ò
                                                                                                                                                                                                                                                                                                                               셤
                                                                                                                                                                                                                                                                                                                                                                  ò
                                                                                                                                                                                                                                                                                                                                                                                               qq
                                                                                                                                                                                                                                                                                                                                                                                                                                     δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                    셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      qq
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            õ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         පු
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             g
                                                                                                                                                                                                          7361575 GGTGCGCGCGGGGGCGTCGAGGAGGCTGCCGGGCCGTCGGCTTCACGCTGGGCACGCC 7361634
                                                                                7361635 CGGACCGTCCCAACTCGGCGTCGTGGAGGCCATTCTGGTCGACCGCGCCTTCGTCGAGGA 7361694
                                                                                                                                                                                                                                                                                                                                                                                                                       7362055 TGCGGATCGTGCGTGATCCGTGAAGCCCTTGCGCGACACGCCCGGAGGTACCCGTCGT 7362114
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   7361995 crccrrcaccaccacrecresccaagrescacacaccesseressesseresceres 7362054
                                                                                                                                                                                                                                                                                                                             CGAGCGGCAGGGCGTGAGTACTACGACGATTCCAAGGCCACCAACGTCGGCGCCGCCCT 1051
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      1166 CCGGGCGGTGCTACTGCTTGGCCGTGACGCCGGGCTGATTGCCC---AGGCACTGGGCAA 1222
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           CGCGGTACCGCTGGTGCGCGTCGCAACGCTGGACGAAGCAGTCCGGCAGGCCGCCGAGCT 1282
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             1283 GGCCCGCGAAGGCGATGCGGTGCTGTTGTCGCCGGCCTGCGCGCGTGGACATGTTCAA 1342
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  1343 GAACTICGAAGAAGGGGGACGCCTGTTCGCCAAAGCCGTAGAGGAGCTAGCGTGATGCTG 1402
                                                                                                                      871
                                                                                                                                                                                                                                                             991
                                                                                                                  812 GCTGGCGTTCCAGTTCGACAGCTGCTGCCGGTTGGCGAACTGAAGATCCGTGGCGCCCA
                                                                                                                                                                                      872 CAACTAITCCAACGCGCTCGCCGCGTGGCGTGGGCCATGCGGTCGGCCTGCCGTTCGA
                                                                                                                                                                                                                                                           CGCCATGCTCGCCGCGCTGAAGGCGTTTTCCGGCCTGGCTCATCGCTGCCAGTGGGTACG
                                                                                                                                                                                                                                                                                                                                                                                                 GCCGCCGATCGAGGGCTGCCGAC----ATCGACGGCAAGCTGGTGCTGCTCGC
                                               CGCCTGAACAAGCCGGACTTCAAGGCTTTCGGCCTGATCGAGGAAGACGGCCAGAAGTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                    1106 CGCCGGAGACGCCAAGGGCCCCGATTTCCATGACCTGCGCGAGCCGGTCGCGCGCTTCTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        APPLICANT: OMORA, SATOSHI
APPLICANT: OMORA, SATOSHI
APPLICANT: IKEDA, HARUO
APPLICANT: ISHIKAWA, JUN
APPLICANT: BARKAWA, JUN
APPLICANT: SHIKAWA, JUN
APPLICANT: SAKRI, YOSHIVUKI
APPLICANT: SAKRI, YOSHIVUKI
APPLICANT: BATORI, MASAHIRA
TITLE OF INVENTION: NOVEL POLYNUCLEOTIDES
FILE REFERENCE: 249-262
CURRENT APPLICATION NUMBER: US/10/156,761
CURRENT FILING DATE: 2002-05-29
PRIOR APPLICATION NUMBER: JP 2001-204089
PRIOR PLILING DATE: 2001-05-30
PRIOR APPLICATION NUMBER: JP 2001-2059
PRIOR APPLICATION NUMBER: JP 2001-272697
NUMBER OF SEQ ID NOS: 15109
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Sequence 6097, Application US/10156761 Publication No. US20030119018A1 GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       CGGCCGCCTCGCC 7362307
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      1403 TCGGTGTTGCGCC 1415
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          US-10-156-761-6097
                                                                                                                                                                                                                                                           932
                                               752
                                                                                                                                                                                                                                                                                                                             992
                                                                                                                                                                                                                                                                                                                                                                                                  1052
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             1223
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       7362295
```

g

ð

g

ò

g

à

ë, 332

273 371 333 491 453 551 513 611 573 671 633 731 693

431

```
1029 GCCACCAACGTCGGCGCCCCTGGCGGCGATCGAGGGGCTGGGTGCCGACATCGACGGC 1088
                                                                                                                                                                                                       GGCGAAATGGCGGTGGCCGCGGACAAGCGTGTCGCCGTCGGCGGCAACCTCGGCACCCCCG
                                                                                                                                                                                                                                                                                GCGCTCGACCTGCCGGCCGACGACATCGAGCTGTACGTGTTGGAGCTGTCGAGCTTCCAG
                                                                                                                                                                                                                                                                                                                                                  552 CTGGAAACCTGCGATCGCCTCAACGCCGAGGTGGCGACCGTGCTGAACGTCAGCGAAGAC
                                                                                                                                                                                                                                                                                                                                                                                                                       CATATGGATCGCTACGACGGCATGGCTGACTACCACCTGGCCAAGCACCGGGATCTTCCGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            GGTGCCCGCCAGGTCGTGAATCGCGCCCGATGCCCTGACCCGACCGCTGATCGCCGAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                732 ACCGTGCCGTGCTGGTCG---TTCGGCCTGAACAAGCCGGACTTCAAGGCTTTCGGCCTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    814 TCGATACCGGTGCCAGGTCCGGTCGGCGTGCTTGACGCCCTGGCCGCGGCGCGCTGGCC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            969 GCTCATCGCTGCCAGTGGGTACGCGAGCGGCGTGAGCTACTACGACGATTCCAAG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             1089 AAGCTGGTGCTGCTCGCCGGCGGGGGCGCAAGGGCGCCGATTTCCATGACCTGCGCGAG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               1039 AGGGTGGTATGGATCGCCGGTGGCCTGAAGGGCGCGCGTCGCTTCACGCCGAGGTTGCG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 1149 CCGGTCGCGCGTTCTGCCGGGCGGTGGTACTGCTTGGCCGTGACGCCGGGCTGATTGCC
                                                      GTCAGCCCCGGCTTGTCGCTGCGCACCCCTGGTACAGGCCGCCGCGAAAGGCGTG
                                                                                                                                                       274 CCGATCTGGGGTGACGTGGAGTTAGCCTGGCGGCTAGACGCAGCGGGCTGCTACGGACCG
                                                                                                                                                                                           AAGGCCCCGGATCGTCGCCATCACCGGTTCCAACGCGAAGAGCACCGTGACCACCCTGGTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          574 CACCTGGACTGGCATGCCACGATGGCCGAATACACCGCGGGCCAAGGCCCGGGTGCTGACC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   789 ATCGAGGAAGACGGCCAGAAGTGGCTGGCGTTCCAGTTCGACAAGCTGCTGCCGGTTGGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      GAACTGAAGATCCGTGGCGCCCACAACTATTCCAACGCGCTCGCCGCGCTGGCGCTGGGC
                  39;
                   Indels
 9.7e-32;
thes 427;
                                                                                                                      333 CGCATCTCCGGTGACATCGATCTCTTCGCCCG-----
 Pred. No. 9.7e
0; Mismatches
Similarity 51.7%;
19; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       CAGGC 1213
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        GAGGC 1163
                                                                                                                                                                                                                                                                                                                                                                                                                                                                       612
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      1209
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        1159
                                                                                                                                                                                                                                                                                                                                492
                                                                                                                                                                                                                                                                                                                                                                 454
                                                                                                                                                                                                                                                                                                                                                                                                                                     514
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            634
   Local
 Best Loc
Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            RESULT
                                                      õ
                                                                               g
                                                                                                                      ò
                                                                                                                                                     g
                                                                                                                                                                                           ö
                                                                                                                                                                                                                        БĎ
                                                                                                                                                                                                                                                              ŏ
                                                                                                                                                                                                                                                                                            a
                                                                                                                                                                                                                                                                                                                              ò
                                                                                                                                                                                                                                                                                                                                                           8
                                                                                                                                                                                                                                                                                                                                                                                                   δ
                                                                                                                                                                                                                                                                                                                                                                                                                                   셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                       δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ŏ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ŏ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ŏ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ద
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    g
                                                                                                                                       1105
                                                                                                                                                         1167 TGCGGATCGTGGCTGTGAAGCCCTTGCGCGACACGCCCCGGAGGTACCCGTCGT 1226
                                                                                    CGGCGGAGACGCCAAGGGCGCCGATTTCCATGACCTGCGCGAGCCGGTCGCGCCGTTCTG 1165
                                                                                                                                                                                                                                        CICCITCGACGAGCIGGIGGCCAAGICGGCACAGCGGCTCCGGGGTGTGGTGCTCATCGG 1166
                                                                                                                                                                                                                                                                            1166 CCGGGCGGTGGTACTGCTTGGCCGTGACGCCGGGCTGATTGCCC---AGGCACTGGGCAA 1222
                                                                                                                                                                                                                                                                                                                                               CGCGGTACCGCTGGTGGCGTCGCAACGCTGGACGAAGCAGTCCGGCAGGCCGCCGAGCT 1282
                                                                                                                                                                                                                                                                                                                                                                                                                   GGCCCGCGAAGGCGATGCGGTGTTGTCGCCGGCCTGCGGCGTGGACATGTTCAA 1342
                                                                                                                                                                                                                                                                                                                                                                                                                                       CGCCATGCTCGGCGCGCTGAAGGCGTTTTCCGGCCTGGCTATCGCTGCCAGTGGGTACG 991
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        APPLICANT: Elsenberg, David
APPLICANT: Rotstein, Sergio H.
APPLICANT: Rotstein, Sergio H.
APPLICANT: Rotstein, Sergio H.
APPLICANT: Marcotte, Edward M.
TITLE OF INVENTION: DETERMINED THE FUNCTIONS AND
TITLE OF INVENTION: INTERACTIONS OF PROTEINS BY COMPARATIVE ANALYSIS
FILE REFERENCE: 07419-032001
CURRENT APPLICATION NUMBER: US/09/712,363
CURRENT PILING DATE: 2000-01-28
PRIOR PELICATION NUMBER: 60/179,531
PRIOR APPLICATION NUMBER: 60/179,531
PRIOR PILING DATE: 1999-01-29
PRIOR PELICATION NUMBER: 60/118,206,
PRIOR FILING DATE: 1999-02-01
PRIOR FILING DATE: 1999-02-01
PRIOR PELICATION NUMBER: 60/134,093
PRIOR PELICATION NUMBER: 60/134,093
PRIOR FILING DATE: 1999-05-14
PRIOR FILING DATE: 1999-05-14
PRIOR FILING DATE: 1999-05-14
PRIOR FILING DATE: 1999-05-14
PRIOR PELICATION NUMBER: 60/165,086
PRIOR PELICATION NUMBER: 60/165,086
PRIOR APPLICATION NUMBER: 60/165,086
PRIOR APPLICATION NUMBER: 60/165,086
PRIOR APPLICATION NUMBER: 60/165,086
PRIOR PRILING DATE: 1999-11-12
                                                                                                                                                                                                                                                                                                                                                                      927 GGCGGTACGGGACGGACTGCGGGCCTTCCGCCCGGACGCCCACCGCATCGCGCACGTCGC
                                                                  CGAGCGGCAGGGCGTGAGTACTACGACGATTCCAAGGCCACCAACGTCGGCGCCGCCCT
                                                                                                                                     1052 GGCGCCGATCGAGGGCTGGCTGCCGAC-----ATCGACGGCAAGCTGGTGCTGCTCGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Score 173.8; DB 10; Length 1461;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        1343 GAACTTCGAAGAACGCGGACGCCTGTTCGCCAAAGCCGT 1381
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     4.0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                NUMBER OF SEQ ID NOS: 292
SOFWARE: FastSEQ for Windows Version
SEQ ID NO 79
LENGTH: 1461
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ; ORGANISM: Mycobacterium tuberculosis
US-09-712-363-79
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Sequence 79, Application US/09712363 Patent No. US20020164588A1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          12.0%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      TYPE: DNA
                                                                                                                                                                                                       1106
                                                                                                                                                                                                                                                                                                                                                                               1227
                                                                                                    987
                                                                                                                                                                                                                                          1107
                                                                                                                                                                                                                                                                                                                                                1223
                                                                                                                                                                                                                                                                                                                                                                                                                   1283
                                                                  992
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            RESULT 7
                                                                                                                                                                  g
                                                                                                                                                                                                                                    a
                                                                                                                                                                                                                                                                                                                                             ò
                                                                                                                                                                                                                                                                                                                                                                             셤
                                                                                                                                                                                                                                                                                                                                                                                                      ζ
                                                                                                                                                                                                                                                                                                                                                                                                                                            셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    셤
                              셤
                                                                ò
                                                                                           셤
                                                                                                                                     ò
                                                                                                                                                                                                    ŏ
                                                                                                                                                                                                                                                                          ò
                                                                                                                                                                                                                                                                                                     셤
```

788

848

813

753

908

873

1028

993

œ

```
Sequence 1, Application US/10329960
Publication No. US20030099277A1
GENERAL INFORMATION
GENERAL INFORMATION
GENERAL INFORMATION:
TITLE OF INVENTION: Nucleotide Sequence of the Haemophilus influenzae Rd Genome, FTILE OF INVENTION: Thereof, and Uses Thereof
TITLE OF INVENTION: Thereof, and Uses Thereof
CURRENT FILING DATE: 2003-01-02
CURRENT APPLICATION NUMBER: US/10/329,960
CURRENT FILING DATE: 2000-08-23
PRIOR PILING DATE: 1995-06-07
PRIOR PILING DATE: 1995-06-07
PRIOR PILING DATE: 1995-04-21
PRIOR FILING DATE: 1995-04-21
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           990 CGCGAGCGCAGGGCGTGAGCTACTACGACGATTCCAAGGCCACCAACGTCGGCGCCGCC 1049
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               1050 CTGGCGGCGATCGAGGGGCTGGGTGCCGACATCGACGCAAGCTGGTGCTGCTCGCCGGC 1109
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                982 GTTGCTGCATTGGCTGGGCT----TTATATTGAGGGTAAATTGCATTTGTTGCTAGGC 1035
                                                                                                                                                                                                                                                                                                                                                     862 GATTCAATTCGTACCGCACTTCGTCATTTCAAAGGGTTAGATCATCGTTTTCAATTAGTG 921
     690 TITICCGGAAATAGTGCGGATTATTGGCTAAAAACT-----GAAAATGGCAAGCAA 741
                                                                                                                                                                                                                                                                                                                  870 CACAACTATTCCAACGCGCTCGCCGCGCTGGCGCTGGGCCATGCGGTCGGCCTGCCGTTC 929
                                                                                                                                                                                                                                                                                                                                                                                                                      930 GACGCCATGCTCGGCGCGCTGAAGGCGTTTTCCGGCCTGGCTCATCGCTGCCAGTGGGTA 989
                                                                                                                                                                                                                                                              750 TICGGCCTGAACAAGCCGGACTTCAAGGCTTTCGGCCTGATCGAGGAAGACGGCCAGAAG
                                                   630 GAACAATGAAGATAGGCTGACTTTTGGGGAAAACGAAAATCAAGCGAAACATACCGTTTC
                                                                                                                                                                                                              810 TGGCTGGCGTTCCAGTTCGACAAGCTGCTGCCGGTTGGCGAACTGAAGATCCGTGGCGCC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   1110 GGAGACGCCAAGGCCCCGATTT 1132
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           6
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ORGANISM: Haemophilus influenzae
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  NAME/KEY: misc_feature
LOCATION: (29298)..(29298)
OTHER INFORMATION: n equals a,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             NAME/KEY: misc_feature
LOCATION: (4747)..(4747)
OTHER INFORMATION: n equals a,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 NAME/KEY: misc_feature
LOCATION: (9921)..(9921)
OTHER INFORMATION: n equals a,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          NUMBER OF SEQ ID NOS: 1
SOFTWARE: Patentin version 3.1
SEQ ID NO 1
LENGTH: 18330121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        NAME/KEY: misc_feature
LOCATION: (10150)..(10150)
OTHER INFORMATION: n equals
  692
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      TYPE: DNA
                                                   요
                                                                                                                                               q
                                                                                                                                                                                                              ò
                                                                                                                                                                                                                                                              셤
                                                                                                                                                                                                                                                                                                                                                             g
                                                                                                                                                                                                                                                                                                                                                                                                                         à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ద
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                g
                                                                                                       ò
                                                                                                                                                                                                                                                                                                                  à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         210 TATTAGCCCAGGGCTTGCGGTAAAACACCAGAAATTCAAACCGCACTTAAAGCGGGAGT 269
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          392 CACCGGTTCCAACGCGAAGAGCACCGTGACCACCCTGGTGGGCGAAATGGCGGTGGCCGC 451
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    330 TACAGGTTCAAATGGTAAAAGTACCGTAACTACTTTAGTTTATGAAATGGCGAAAGCTGC 389
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                511
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     571
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           631
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              570 TITAGAAGAITATCGCCAAGCAAATTACGCATTTATCATAATGCTAAAGTAGGTGTGTT 629
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             CATGGCTGACTACCACCTGGCCAAGCACCGGATCTTCCGCGGTGCCCGCCAGGTCGTGGT 691
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        452 GGACAAGCGTGTCGCCGTCGGCGGCAACCTCGGCACCCCGGCGCTCGACCTGCTGGCCGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            512 CGACATCGAGCTGTACGTGTTGGAGCTGTCGAGCTTCCAGCTGGAAACCTGCGATCGCCT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            510 AAAAGCTGCGGCAGCGACTGTTTGAACGTGACTGAAGATCATATGGATCGTTATATGGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        272 TGTCAGCCCCGGCTTGTCGCTGCGCACCCCTGCGTACAGGCCGCGCGCAAAGGCGT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               332 GCGCATCTCCGGTGACATCGATCTTTCGCCCGCGAGGCGAAGGCCCCGATCGTCGCCAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        CAACGCCGAGGTGGCGACCGTGCTGAACGTCAGCGAAGACCATATGGATCGCTACGACGG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Length 1314;
                                                                                                                                          APPLICANT: 2981IG, JUGILIA W.
APPLICANT: Wall, Daniel
APPLICANT: Trawick, John D.
APPLICANT: Trawick, John D.
APPLICANT: Trawick, John D.
APPLICANT: Tamouto, Robert T.
APPLICANT: Xu, H. Howard
TITLE OF INVENTION: Identification of Essential Genes in
TITLE OF INVENTION: Identification of Essential Genes in
TITLE OF INVENTION: Identification of Essential Genes in
TITLE OF INVENTION: IDENTIFY. 105/09/815,242
CURRENT PELLING DATE: 2001-03-21
PRIOR PELLING DATE: 2000-03-21
PRIOR PILING DATE: 2000-05-23
PRIOR FILING DATE: 2000-05-23
PRIOR FILING DATE: 2000-10-23
PRIOR FILING DATE: 2000-11-27
PRIOR FILING DATE: 2000-11-27
PRIOR APPLICATION NUMBER: 60/253,625
PRIOR PELLING DATE: 2000-11-27
PRIOR APPLICATION NUMBER: 60/253,938
PRIOR PELLING DATE: 2000-11-27
PRIOR APPLICATION NUMBER: 60/253,938
PRIOR PELLING DATE: 2001-02-22
PRIOR PELLING DATE: 2001-02-16
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Score 149.8; DB 9; Length 1 Pred. No. 4.1e-26; 0; Mismatches 407; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               NUMBER OF SEQ ID NOS: 14110
SOFTWARE: FastSEQ for Windows Version
Sequence 7090, Application US/09815242
Patent No. US20020061569A1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   TYPE: DNA
ORGANISM: Haemophilus influenzae
                                                                                                 Ohlsen, Kari L.
Zyskind, Judith W.
Wall, Daniel
Trawkick, John D.
Carr, Grant J.
Yamamoto, Robert T.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Query Match
Best Local Similarity 51.0%;
Matches 440; Conservative (
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ; LOCATION: (1)...(1314)
US-09-815-242-7090
                                                   GENERAL INFORMATION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       FEATURE:
NAME/KEY: CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                270
```

à 8 õ g õ q g

ð

ò 셤 ò 셤 ò

```
NAME/KEY: misc_feature
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             PEATURE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     NAME/KEY: misc_feature
LOCATION: (80024)..(80024)
OTHER INFORMATION: n equals a, t, g or c
FEATURE:
                                                                                                                                                                                                                                                                             NAME/KEY: misc_feature
LOCATION: (40808)..(40810)
OTHER INFORMATION: n equals a, t, g or
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        NAME/KEY: misc_feature
LOCATION: (55369)..(55369)
OTHER INFORMATION: n equals a, t, g or
FEATURE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          NAME/KEY: misc_feature
LOCATION: (65313)..(65313)
OTHER INFORMATION: n equals a, t, g or
                                                                                                                                                                                                                                                                                                                                                                         NAME/KEY: misc_feature
LOCATION: (44416)..(44416)
OTHER INFORMATION: n equals a, t, g or
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      NAME/KEY: misc_feature
LOCATION: (45593)..(45593)
OTHER INFORMATION: n equals a, t, g or
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      NAME/KEY: misc_feature
LOCATION: (47036)..(47036)
OTHER INFORMATION: n equals a, t, g or
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 NAME/KEY: misc_feature
LOCATION: (51334)..(51334)
OTHER INFORMATION: n equals a, t, g or
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   NAME/KEY: misc_feature
LOCATION: (65309)..(65309)
OTHER INFORMATION: n equals a, t, g or
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       or
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  or
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  g or
                                                                                                                                                                                    NAME/KEY: misc_feature
LOCATION: (36636)..(36636)
OTHER INFORMATION: n equals a, t, g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          NAME/KEY: misc_feature
LOCATION: (45732)..(45732)
OTHER INFORMATION: n equals a, t, g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   NAME/KEY: misc_feature
LOCATION: (51786):.(51786)
OTHER INFORMATION: n equals a, t, g
FEATURE:
NAME/KEY: misc_feature
LOCATION: (36543)..(36543)
OTHER INFORMATION: n equals a, t,
FEATURE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                    NAME/KEY: misc_feature
LOCATION: (44905)..(44905)
OTHER INFORMATION: n equals a, t,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             NAME/KEY: misc_feature
CCATION: (51602)..(31602)
OTHER INFORMATION: n equals a, t,
FEATURE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 NAME/KEY: misc_feature
LOCATION: (51805)..(51805)
OTHER INFORMATION: n equals a, t,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             NAME/KEY: misc_feature
LOCATION: (44975)..(44975)
OTHER INFORMATION: n equals a,
FRATURE:
                                                                                           NAME/KEY: misc_feature
LOCATTON: (36551)..(36551)
OTHER INFORMATION: n equals a,
FEATURE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          FEATURE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              FEATURE
```

```
ပ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        O
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               O
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   U
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             O
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    υ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     O
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           NAME/KEY: misc_feature
LOCATION: (119924)..(119924)
OTHER INFORMATION: n equals a, t, g or
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                NAME/KEY: misc_feature
LOCATION: (131340)..(131340)
OTHER INFORMATION: n equals a, t, g or
NAME/KEY: misc_feature
LOCATION: (100091)..(100091)
OTHER INFORMATION: n equals a, t, g or
                                                                                                                                    g or
                                                                                                                                                                          NAME/KEY: misc_feature
LOCATION: (105121)..(105121)
OTHER INFORMATION: n equals a, t, g or
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              NAME/KEY: misc_feature
LOCATION: (139910)..(139910)
OTHER INFORMATION: n equals a, t, g or
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 NAME/KEY: misc_feature
LOCATION: (145171)..(145171)
OTHER INFORMATION: n equals a, t, g or
                                                                                                                                                                                                                                                                                                                                                                                                   g or
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  g or
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          NAME/KEY: misc_feature
LOCATION: (145058)..(145058)
OTHER INFORMATION: n equals a, t, g
                                                                                                                                                                                                                                                                                                                                                                                                                                     NAME/KEY: misc_feature
LOCATION: (119750)..(119750)
OTHER INFORMATION: n equals a, t,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        NAME/KEY: misc_feature
LOCATION: (122167)..(122167)
OTHER INFORMATION: n equals a, t,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       NAME/KEY: misc_feature
LOCATION: (131360)..(131360)
OTHER INFORMATION: n equals a, t,
                                                                                                                                                                                                                                                                                                                                                   NAME/KEY: misc_feature
LOCATION: (117136)..(117136)
OTHER INFORMATION: n equals a, t,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  NAME/KEY: misc_feature
LOCATION: (120038)..(120038)
OTHER INFORMATION: n equals a, t,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              NAME/KEY: misc_feature
LOCATION: (122336)..(122336)
OTHER INFORMATION: n equals a, t,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  NAME/KEY: misc_feature
LOCATION: (140398)..(140398)
OTHER INFORMATION: n equals a,
                                                                                                                                                                                                                                                               NAME/KEY: misc_feature
LOCATTON: (107248)..(107248)
OTHER INFORMATION: n equals a,
FEATURE:
                                                                                      NAME/KEY: misc_feature
LOCATION: (102696)..(102696)
OTHER INFORMATION: n equals a,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 NAME/KEY: misc_feature
LOCATION: (121344)..(121344)
OTHER INFORMATION: n equals a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    NAME/KEY: misc_feature
LOCATION: (142750)..(142750)
OTHER INFORMATION: n equals
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      FEATURE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   FEATURE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         FEATURE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                FEATURE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           FEATURE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               FEATURE:
```

```
GCCCAGAAGTGGCTGGCGTTCCAGTTCGACAAGCTGCTGCCGGTTGGCGAACTGAAGATC 860
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       TILLE OF INVENTION: Expression
FILE REFERENCE: 10085.500-US
CURRENT APPLICATION NUMBER: US/09/974,300
CURRENT FILING DATE: 2001-10-05
PRIOR APPLICATION NUMBER: 09/680,598
PRIOR FILING DATE: 2000-10-06
PRIOR PILING DATE: 2000-10-06
PRIOR FILING DATE: 2000-03-27
NUMBER OF SEQ ID NOS: 8481
SOFTWARE: FastSEQ for Windows Version 4.0
SEQ ID NO 1685
                                                                                                                  1204167 GGAGACGGAAAAGGGGCTGATTT 1204189
                                                                                  GGAGACGGCAAGGGCGCCGATTT 1132
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              TYPE: DNA ORGANISM: Bacillus licheniformis
                                                                                                                                                                                 US-09-974-300-1685
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              US-09-974-300-1685
                                                                                                                                                                                                                                                                                                                                                                                                                                                                               LENGTH: 1352
                                                                                  1110
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          349
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          447
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        409
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       621
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   801
                                                  q
                     ö
                                                                                  ò
                                                                                                             g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           음
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          á
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       qq
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       엄
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    å
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ŏ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          1203341 TATTAGCCCAGGGCTTGCGGTAAAACACCCAGAAATTCAAACCGCACTTAAAGCGGGAGT 1203400
                                                                                                                                                                                                                                                                                                                                                                                                                                                         1203401 GGAAGTAATCGGCGATATTGAATTATTCTGCCGCCAGCGACAAAGCCAATTGTGGGGGAT 1203460
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  1203761 GAACAATGAAGATAGGCTGACTTTTGGGGAAAACGAAAATCAAGCGAAACATACCGTTTC 1203820
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         1203521 TGGTGTGAAAGTTGGTATGGGCGGAAATATTGGGATTCCCGCTTTGTCATTGTTGAATGA 1203580
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          1203701 TTTAGAAGATTATCGCCAAGCAAATTACGCATTTATCATAATGCTAAAGTAGGTGTGTT 1203760
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  1203821 TTTTGCGGAAAATAGTGCGGATTATTGGCTAAAAACT-----GAAAATGGCAAGCAA 1203872
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  1203933 CATAATTATAGAACATTTTGGCAGCAACAGCATTGGCACAAGCTATAGGTATTAATTTA 1203992
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1203993 GATTCAATTCGTACCCCACTTCGTCATTTCAAAGGGTTAGATCATCGTTTTCAATTAGTG 1204052
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     1204053 CATCAAGCTAATGGCATTCGTTGGATTAATGACTCTAAAGCAACAATGTGGGGGAGTACA 1204112
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               CGCGAGCGCCAGGCGTGAGCTACTACGACGATTCCAAGGCCACCAACGTCGGCGCCGCC 1049
                                                                                                                                                                                                                                                                                                                                                                 331
                                                                                                                                                                                                                                                                                                                                                                                                                              391
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           571
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        572 CAACGCCGAGGTGGCGACCGTGCTGAACGTCAGCGAAGACCATATGGATCGCTACGACGG 631
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 GACGCCATGCTCGGCGCGCTGAAGGCGTTTTCCGGCCTGGCTCATCGCTGCCAGTGGGTA 989
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      632 CATGGCTGACTACCACCTGGCCAAGCACCGGATCTTCCGCGGGTGCCCGCCAGGTCGTGGT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    TTCGGCCTGAACAAGCCGGACTTCAAGGCTTTCGGCCTGATCGAGGAAGACGGCCAGAAG
                                                                                                                                                                                                                                                                                                                                                            TGTCAGCCCCGGCTTGTCGCTGCGCACCCCTGCGTACAGGCCGCCGCGAAAGGCCGT
                                                                                                                                                                                                                                                                                                                                                                                                                          GCGCATCTCCGGTGACATCGATCTTCGCCCGCGAGGCGAAGGCCCCGATCGTCGCCAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           CACCGGTTCCAACGCGAAGAGCACCGTGACCACCTGGTGGGCGAAATGGCGGTGGCCGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           GGACAAGCGTGTCGCCGTCGGCGAACCTCGGCACCCGGGCGCTCGACCTGCTGGCCGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         CGACATCGAGCTGTACGTGTTGGAGCTGTCGAGCTTCCAGCTGGAAACCTGCGATCGCCT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       TGGCTGGCGTTCCAGTTCGACAAGCTGCTGCCGGTTGGCGAACTGAAGATCCGTGGCGCC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  CACAACTATTCCAACGCGCTCGCCGCGCTGGCGCTGGGGCCATGCGGTCGGCCTGCCGTTC
                                                                                                                                                                                                                                                                                                                                 Gaps
                                                                                                                                                                                                                                                                                               DB 14; Length 1830121;
                                                                                                                                                                                                                                                                                                                               16;
                                                                                                                                                                                                                                                                                            Score 149.8; DB 14; Length
Pred. No. 2.9e-26;
0; Mismatches 407; Indels
                    ပ
                                                                                  υ
                                                                                                                                                 υ
                                                                                                                                                                                                                 O
                     ör
                                                                                                                                                   ö
                                                                                                                                                                                                                 ö
                                                                                    ö
                    δ
                                                                                    g
                                                                                                                                                   б
                                                                                                                                                                                                                 б
                    نہ
                                                                                                                                                                                                                 ú
                                                                                                                                                                            NAME/KEY: misc_feature
LOCATION: (152500)...(152500)
OTHER INFORMATION: n equals a,
ION: (145942)..(145942)
INFORMATION: n equals a,
                            FEATURE:
NAME/KEY: misc_feature
LOCATION: (147197)...(147197)
OTHER INFORMATION: n equals a,
FEATURE:
NAME/KEY: misc_feature
LOCATION: (150841)...(150841)
OTHER INFORMATION: n equals a,
FEATURE:
                                                                                                                                                                                                                                                                                          Query Match 10.3%;
Best Local Similarity 51.0%;
Matches 440; Conservative
                                                                                                                                                                                                                                          NAME/KEY: misc_feature
LOCATION: (152530)..(152530)
LOCATION:
OTHER INFO
                                                                                                                                                                                                                                                                                                                                                                                                                          332
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           452
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     750
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    810
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  870
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 930
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           512
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               990
                                                                                                                                                                                                                               FEATURE:
                                                                                                                                                                                                                                                                                                                                                                                          업
                                                                                                                                                                                                                                                                                                                                                                                                                          à
                                                                                                                                                                                                                                                                                                                                                                                                                                                       g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                g
                                                                                                                                                                                                                                                                                                                                                             ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  유
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  d
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ò
```

```
1109
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           4
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  386
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        289 GGTATCCCGGTCTGGACGGAGGTTGAACTCGCCTATCATCTGACAGATGCTCCGTTCATC 348
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                503
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                560
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  620
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  588
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              387 GCCATCACCGGTTCCAACGCGAAGAGCACCGTGACCACCCTGGTGGGCGGAAATGGCGGTG 446
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               649 GAAACAGACGTTGCCGTTGTCAATTTGGACGATGAGACAGTCGTCCGGCTCGCGGAGTGT 708
1050 CTGCCGCCGATCGAGGGGCTGCCGACATCGACGCCAAGCTGGTGCTGCTCGCCGGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               327 GGCGTGCGCATCTCCGGTGACATCGATCTTCGCCCGCGAGGCGAAGGCCCCGATCGTC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       GGCATTACCGGTTCAAACGGAAAGACGACAACGACAACGCTTGTTTATGAAATGCTGAAG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                GCCGCGGACAAGCGTGTCGCCGTCGGCGCAACCTCGGCACCCGGCGCGCTCGACCTG---
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              681 CAGGTCGTGGTGAATCGCGCCGATGCCCTGACCCGACCGCTGATCGCCGATACCGTGCCG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    741 TECTEGTCGTTCGGCCTGAACAAGCCGGACTTCAAGGCTTTCGGCCTGATCGAGGAAGAC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       109 TCAAAAGCGGAGAAGGTGTATTTTCGGTCCGCCGGACACTTGAGCGCGGGAGCGTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                504 ---CIGGCCGACGACATCGAGCTGTACGTGTTGGAGCTGTCGAGCTTCCAGCTGGAAACC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               561 TGCGATCGCCTCAACGCCGAGGTGGCGACCGTGCTGAACGTCAGCGAAGACCATATGGAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        529 ACTIATCAATTCAGACCGAAGATTGGATTATTATTAAACGTATTTGATGCCCATCTCGAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  CGCTACGACGGCATGGCTGACTACCACCTGGCCAAGCACCGGATCTTCCGCGGTGCCCGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        21;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Length 1352;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Indels
                                                                                                                                                                                                                                                                                                                Sequence 1685, Application US/09974300
Battent No. US20020146721A1
GENERAL INFORMATION:
APPLICANT: Berka. Randy M.
APPLICANT: Clausen, Ib Groth
TITLE OF INVENTION: Methods For Monitoring Multiple Gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Query Match 6.3%; Score 91.8; DB 10; Best Local Similarity 45.7%; Pred. No. 1.7e-12; Matches 490; Conservative 0; Mismatches 562;
```

```
981 CAGTGGGTACGCGAGGGGGGGGGGGGGGGCTACTACGACGATTCCAAGGCCACCAACGTC 1040
                                                                                                                                                                                                                                                                                                                                                   -----TCTTGCGACGAAAAAAGCGCTG---TCCGCCTTTCAAAAAGCGGTCATTTTG 1056
                                                                                                                                                                                                                                                                                                                                                                                                                         1101 CTCGCCGCCGAGGACGCCAAGGGCCCCATTTCCATGACCTGCGCGGAGCCGGTCGCGCGC 1160
                                                                                                                                                                                                                                                                                                                                                                                                                                                           1161 TTCTGCCGGGCGGTGGTACTGCTTGGCCGTGACGCCGGGCTGATTGCCCCAGGCACTGGGC 1220
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                GAGCTGGCCCGCGAAGGCGATGCGGTGTTGTCGCCGGCCTGCGCGCGAGCCTGGACATG 1337
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      1237 AGCCTGTCAGACGAAGGAGATGTCATTCTTCTGTCCCCGGCCTGCGCAAGCTGGGATCAG 1296
                                                                                                                                                                                                                                                                                                                 1041 GGCGCCCCTGGCGGCGATCGAGGGCTGGGTGCCGACATCGACGGCAAGCTGGTGCTG 1100
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           AACGCGGTACCGCTGGTG---CGCGTCGCAACGCTGGACGAAGCAGTCCGGCAGGCCGCC 1277
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ATGGGAATACAACAGGTTAAACGTGTCGATAATGTTGAACAAGCAGCAACTGCGGCGTTC 1236
                                                                                                                                                                                                                                                            949 CAATACGTCGCGACGATCAAAACAGACTGTTTTACAATGACAGCAAAGCGACAAACAT- 1007
                                                                                                                                                 889 GITICCGACGCGCCGTCCGTAAGGTGCTGACGAGCTTTACAGGTGTTAAGCACAGGATG 948
CGTGGCGCCCACAACTATTCCAACGCGCTCGCCGCGCTGGCGCTGGGCCATGCGGTCGGC 920
                                               829 CCGGGAGAGCACATTTGGAGAACATTTTGGCCGCCCTTTGCATCGTTAAAACAGCAGGC 888
                                                                                                    CTGCCGTTCGACGCCATGCTCGGCGCGCTGGAAGGCGTTTTCCGGCCTGGCTCATCGCTGC 980
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      GTAAAAGCGGTGATCACTTTCGGCGAGACCGCGCGCAAGTTTGAGAAGCTGGCCGAAGAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           TTCAAGAACTTCGAAGAACGCGGACGCCTGTTCGCCAAAGCCGTAGAGGAGCT 1390
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       GENERAL INFORMATION:
GENERAL INFORMATION:
GENERAL INFORMATION:
GENERAL INFORMATION:
APPLICANT: NAKAGAWA, SATOSHI
APPLICANT: MAZOGUCI, HIROSHI
APPLICANT: MAZOGUCI, HIROSHI
APPLICANT: HAYASHI, MININO
APPLICANT: TATELSHI, NACKO
APPLICANT: TATELSHI, NACKO
APPLICANT: TATELSHI, NACKO
APPLICANT: SENOH, AKHIRO
APPLICANT: TATELSHI, NACKO
APPLICANT: SENOH, AKHIRO
APPLICANT: SENOH, AKHIRO
APPLICANT: SENOH, AKHIRO
APPLICANT: SENOH, ANSTO
APPLICANT: OZAKI, AKIO
TITLE OF INVENTION: NOVEL FOLYNUCLEOTIDES
FILE REFRENCE: 29-125
CURRENT APPLICATION NUMBER: UP 99/377484
PRIOR FILING DATE: 2000-04-07
PRIOR PRIOR PLICATION NUMBER: JP 00/159162
PRIOR PRIOR PLICATION NUMBER: JP 00/28098
PRIOR FILING DATE: 2000-04-07
PRIOR PLILING DATE: 2000-08-03
NUMBER OF SEO ID NOS: 7059
SEQ ID NO I
LENGTH: NAME
APPLICATION VERNER: JP 00/28098
NUMBER OF SED ID NOS: 7059
SEQ ID NO I
LENGTH: NAME
APPLICATION VERNER: JP 00/28098
LENGTH: SADOL NOS: 7059
SEQ ID NO I
LENGTH: NAME
APPLICATION VERNER: JP 00/28098
LENGTH: SADOL NOS: 7059
SEQ ID NO I
LENGTH: SADOL NOS: 7059
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ; TYPE: DNA; ORGANISM: Corynebacterium glutamicum US-09-738-626-1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             1297
                                                                                                                                                                                                                                                                                                                                                                       1008
                                                                                                                                                                                                                                                                                                                                                                                                                                                                         1057
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         1221
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           1177
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           1338
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      1117
                                                                                                                                                 a
                                                                                                  ð
                                                                                                                                                                                                       ò
                                                                                                                                                                                                                                                            셤
                                                                                                                                                                                                                                                                                                              ò
                                                                                                                                                                                                                                                                                                                                                              g
                                                                                                                                                                                                                                                                                                                                                                                                                   å
                                                                                                                                                                                                                                                                                                                                                                                                                                                                   a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ద
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        셤
```

Length 3309400;

Score 86; DB 10; Pred. No. 2.6e-11;

5.9%;

Query Match Best Local Similarity

```
2286371 TGGTAGCGAAAAACCGCATTGATGTGTTAGTTGCAGAGCTGTCTAGTTTCCAATTGCACT 2286312
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  2286071 GGGAGCTCGTCGATAATGCCTACGGCAATAATGTGGTGCTTGCATCCGCTGACGCATTA 2286012
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            285831 ACCCCACGCTGATTCTGCGCTAGCTGGCATGATTCAGTTTGGGTTGTCGGCG 2285772
                                                                                                                                                                                    2286431 ATGAGGGCGGTTTTACTGCCAAGGCAGTGGGCAATATCGGCATCCCGGTGTCTGAGGCTT 2286372
                                                                                                                                                                                                                                                                                                                                                                                                                                                                 2286192
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     2286131 GTGGTCTCATTGGATTTACCGTCAATGAGCCTGCAACCGGCCAGTTGGGTGTGAAAGCGG 2286072
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    2285951 AGGGCGTGGCACCTGAGGCGATCGCGCGTGCGTTGGATTCTTTTGAGGTGGCAGGCCACC 2285892
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               1036 ACGTCGCCCCCCTGCCGCCGATCGAGGGCTGCGTGCCGACATCGACGCAAGCTGG 1095
  'n
                                                                         445 TGGCCGCGGGACAAGCGTGTCGCCGTCGGCGAACCTCGGCACCCCGGCGCTCGACCTGC
                                                                                                                                                                                                                                                                                                                                                                      2286311 GGTCTCCAACCTTCACCCCTGATGCTGGCGTGGTGCTCAACTTGGCTGAGGATCACATCG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           2286191 TCGCCATCATTGGGGCAGACGATCCTTATTTGGTGCAGCTGACTTCTGAAGCAGACTTGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         736 TGCCGTGCTGGTCGTTCGGCCTGAACAAGCCGGACTTCAAGGCTTTCGGCCTGATCGAGG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           916 TCGGCCTGCCGTTCGACGCCATGCTCGGCGCCTGAAGGCGTTTTCCGGCCTGGCTCATC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  976 GCTGCCAGTGGGTACGCGAGCGGCAGGCGTGAGCTACTACGACGATTCCAAGGCCACCA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  385 TCGCCATCACCGGTTCCAACGCGAAGAGCACCGTGACCACCCTGGTGGGCGAAATGGCGG
                                                                                                                                                                                                                                  TGGCCG-----ACGACATCGAGCTGTACGTGTTGGAGCTGTCGAGCTTCCAGCTGGAAA
                                                                                                                                                                                                                                                                                                                          559 CCTGCGATCGCCTCAACGCCGAGGTGGCGACCGTGCTGAACGTCAGCGAAGACCATATGG
                                                                                                                                                                                                                                                                                                                                                                                                                     619 ATCGCTACGACGCATGGCTGACTACCACCTGGCCAA---GCACCGGATCTTCCGCGGTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               676 CCCGCCAGGTCGTGAATCGCGCCGATGCCCTGACCCGACCGCTGATCGCCGATACCG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      796 AAGACGGCCAGAAGTGGCTGGCGTTCCAGTTCGACAAGCTGCTGCTGCGGTTGGCGAACTGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              856 AGATCCGTGGCGCCCACAACTATTCCAACGCGCTCGCCGCGCTGGCGCTGGGCCATGCGG
  Gaps
6
Indels
385;
Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        APPLICANT: OMUTA, SATOSHI
APPLICANT: IKEDA, HARUO
APPLICANT: IKEDA, HARUO
APPLICANT: ISHIKAWA, JUN
APPLICANT: SHIBA, TADAYOSHI
APPLICANT: SHIBA, TADAYOSHI
APPLICANT: SAKAKI, YOSHIYUKI
APPLICANT: HATTORI, MASAHIRA
ITLE OF INVENTION: NOVEL POLYNUCLEOTIDES
FILE REFERENCE: 249-262
CURRENT APPLICATION NUMBER: US/10/156,761
CURRENT FILING DATE: 2002-05-29
PRIOR FILING DATE: 2001-05-30
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     2285771 GACAGCTCAAAGGCGCGGAC 2285752
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Sequence 5987, Application US/10156761 Publication No. US20030119018A1 GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         1096 TGCTGCTCGCCGGCGAGAC 1115
ő
Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  US-10-156-761-5987
Matches 346;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            RESULT 12
                                                                                       g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         셤
                                                                                                                                        ŏ
                                                                                                                                                                               g
                                                                                                                                                                                                                                Óγ
                                                                                                                                                                                                                                                                            g
                                                                                                                                                                                                                                                                                                                          ŏ
                                                                                                                                                                                                                                                                                                                                                               g
                                                                                                                                                                                                                                                                                                                                                                                                                  ŏ
                                                                                                                                                                                                                                                                                                                                                                                                                                                         g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              δy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ò
```

```
RESULT 14
US-09-790-988-1/c
                                                                                                                                                                                                                                                                                                                                                                                                                                                                  173
                                                                                                                                                                     TYPE: DNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    593
                                                                                                                                                                                                 FEATURE:
                                                                                                                                                                                                                                                                                                                                                                                                                                    q
                                                                                                                                                                                                                                                                                                                                                                            g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ద
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ద
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 qq
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             g
                                                                                                                                                                                                                                                                                                                                                                                                           õ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ð
                                                                                                                                                                                                              ö
                                                                                                                                                                                                                                                                    GGGCCGGCGTACGGCGGCAACGAGCGGCCCCTCGACGCACCCCCGTCGACGTGGA 215
                                                                                                                                                                                                                                                                                                                                                                              395
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         412
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 472
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              575
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            532
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        635
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     592
                                                                                                                                                                                                                                         53 GAGCCTGATCGCCTCCGACCACTTCCGCATCGTTGTCGGCCTCGGCAAGAGCGGCATGTC 112
                                                                                                                                                                                                                                                                                                                               216 CCGCGCGCGAAGATCACCTGGCACGGCCCGGGCCAGCTCGTCGGGTATCCGATCCAGAA 275
                                                                                                                                                                                                                                                                                                                                                                                                                    ACTCGACGCCGAGTTCCTCTGCTCCGCCGCGAACTCTATGTCAGCCCCGGCTTGTCGCT 292
                                                                                                                                                                                                                                                                                                                                                                                                                                                                             GCGCACCCCTGCGCTGGTACAGGCCGCGCGAAAGGCGTGCGCATCTCCGGTGACATCGA 352
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           CCTCGGCGACCCGGTGGAGCAGCGCCCCAGCCTCGGCGCCTCTCCCTCGACTTCGACCC 455
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  456 cogocregocogacogacorocacococococococococogas ars
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               695
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           GCTGAACGTCAGCGAAGACCATATGGATCGCTACGACGGCATGGCTGACTACCACCTGGC 652
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        GGTCACCATCGGCGAGGTCCTGCCGGTCGCGGAGAAGCACCTGCGGGACGTACTGGAGAA 755
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                CGTCACCATGCACGGTTTCGCCCTGAACGTGAATCCGGACACGTCCTCCTTCGACAAT
                                                                                                                                                                                                                                                                                                  CCTGGTGCGCTACCTGGCGCGCGCGCGTTGCCTTTCGCCGTGGTCGATACCCGAGAAAA
                                                                                                                                                                                                                                                                                                                                                             CCCGCCGGAGCTGGCCACCCTGCGTGCCCAGTATCCGCAGGTGGAAGTGCGTTGCGGCGA
                                                                                                                                                                                                                                                                                                                                                                                                                                          TCTCTTCGCCCGCGAGGCCCAAGGCCCCGATCGTCGCCATCACCGGTTCCAACGCGAAGAG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                CACCGTGACCACCCTGGTGGGGGAAATGGCGGTGGCCGCGGGACAAGCGTGTCGCCGTCGG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           CGCCGGCCAGCGCGCGAGGACCGCAAGATCTGCGCCATGGGCATCCGCGTCGCCAAGGG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         CGGCAACCTCGGCACCCCGGCGCTCGACCTGGCCGACGACATCGAGCTGTACGTGTT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  GGAGCTGTCGAGCTGCAAACCTGCGATCGCCTCAACGCCGAGGTGGCGACCGT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              CATCCCGTGCGGGATCCGCGGGCGGGGGTCCCTCGCGTACGAGCTGGGCCGCGA
                                                                                                                                                                                                              Gaps
                                                                                                                                                                                                              ö
                                                                                                                                                                                 Length 795;
                                                                                                                                                                                                              Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       CAAGCACCGGATCTTCCGCGGTGCCCGCCAGGTCGTGG 690
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 CGCGGACCTGAAGCCGCGCGAGGTGGAACGGGCCTCGG 793
                                                                                                                                                                                Score 68.4; DB 14;
Pred. No. 5.2e-07;
0; Mismatches 356;
PRIOR APPLICATION NUMBER: JP 2001-272697
PRIOR FILING DATE: 2001-08-02
NUMBER OF SEQ ID NOS: 15109
SEQ ID NO 5987
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Sequence 1, Application US/10156761
Publication No. US20030119018A1
GENERAL INFORMATION:
APPLICANT: OMURA, SATOSHI
APPLICANT: ISHIKAWA, JUN
APPLICANT: HORIKAWA, HIROSHI
APPLICANT: SHIRAWA, HIROSHI
APPLICANT: SHIRA, TADAYOSHI
APPLICANT: SAKAKI, YOSHIYUKI
                                                                                      ORGANISM: Streptomyces avermitilis
                                                                                                                                                                                 4.78;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ISHIKAWA, JUN ..
HORIKAWA, HIROSHI
SHIBA, TADAVOSHI
SAKAKI, YOSHIXUKI
HATTORI, MASAHIRA
                                                                                                                                                                           Query Match
Best Local Similarity 44.28
Matches 282; Conservative
                                                                                                                   ; NAME/KEY: CDS
; LOCATION: (1)..(795)
US-10-156-761-5987
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           US-10-156-761-1/c
                                                                                                                                                                                                                                                                                                  113
                                                                                                                                                                                                                                                                                                                                                             173
                                                                                                                                                                                                                                                                                                                                                                                                                    233
                                                                                                                                                                                                                                                                                                                                                                                                                                                 336
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         396
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              413
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    9/9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  533
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               989
                                                                                                                                                                                                                                                                                                                                                                                                                                                                               293
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      353
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         473
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       969
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      653
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                756
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         APPLICANT:
                                                            LENGIH:
                                                                                                                                                                                                                                         ò
                                                                                                                                                                                                                                                                    g
                                                                                                                                                                                                                                                                                                  à
                                                                                                                                                                                                                                                                                                                            g
                                                                                                                                                                                                                                                                                                                                                             ò
                                                                                                                                                                                                                                                                                                                                                                                     윱
                                                                                                                                                                                                                                                                                                                                                                                                                   õ
                                                                                                                                                                                                                                                                                                                                                                                                                                              8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                             õ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     õ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 쉽
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                g
```

```
7237150 ccecesceschagarcaccrescacescecessecresceaecrescarcesces 7237091
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            7237210 GGGCCGGCGTACGGCGGACAACGAGCGCCCCTCGACGGCACCCCCGTCGTCGTCGGGGA 7237151
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        7236970 CCTCGGCGACCCGGTGGAGCAGCGCCCCAGCCTCGGCGGCCTCTCCCTCGACTTCGACCC 7236911
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         7236910 CCGCCTGGCCGACGACGAGGTTCGACCCCGGCTCAACGGCCCCGAGTACGCCCCCTCCAA 7236851
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       7236731
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           7236670 GGTCACCATCGGCGAGGTCCTGCCGGTCGCGGAGAAGCACCTGCGGGACGTACTGGAGAA 7236611
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         472
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        53 GAGCCTGATCGCCTCCGACCACTTCCGCATCGTTGTCGGCCTCGGCAAGAGCGGCATGTC 112
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              293 GCGCACCCCTGCGCTGGTACAGGCCGCGGAAAGGCGTGCGCATCTCCGGTGACATCGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               7236790 CGTCACCATGCACGGTTTCGCCCTGAACGTGAATCCGGACACGTCCTCCTTCGACAAGAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             113 CCTGGTGCGCTACCTGGCGCGCGCGCGTTGCCTTTCGCCGTGGTCGATACCCGAGAGAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   CCCGCCGGAGCTGGCCACCCTGCGTGCCCAGTATCCGCAGGTGGAAGTGCGGTTGCGGCGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 233 ACTCGACGCCGAGTTCCTCTGCTCGCCCGCGAACTCTATGTCAGCCCCGGCTTGTCGCT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              7237030 CGTCTGCGCGGAGTTCGGCGTGGCCACCGAGCGCGTGGAGGGCCGGGCGGCGGCGTTGGGT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            353 TCTCTTCGCCCGCGAGGCGAAGGCCCCGATCGTCGCCATCACCGGTTCCAACGCGGAAGAG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         413 CACCGTGACCACCCTGGTGGCGGAAATGGCGGTGGCCGCGGACAAGCGTGTCGCCGTCGG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   473 GGGCAACCTCGGCACCCCGGCGCTCGACCTGCTGCCGACGACATCGAGCTGTACGTGTT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        533 GGAGCTGTCGAGCTTCCAGCTGGAAACCTGCGATCGCCTCAACGCCGAGGTGGCGACCGT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  GCTGAACGTCAGCGAAGACCATATGGATCGCTACGACGGCATGGCTGACTACCACCTGGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           0; Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Length 9025608;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            7236610 cecegacerdaagecececeageregaacececece 7236573
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Score 68.4; DB 14;
Pred. No. 3.3e-07;
0; Mismatches 356;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               653 CAAGCACCGGATCTTCCGCGGTGCCCGCCAGGTCGTGG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            g, other or unknown
                           FILE REFERENCE: 249-262
CURRENT APPLICATION NUMBER: US/10/156,761
CURRENT FILING DATE: 2002-05-29
PRIOR APPLICATION NUMBER: JP 2001-204089
PRIOR FILING DATE: 2001-05-30
PRIOR FILING DATE: 2001-08-02
NUMBER OF SEQ ID NOS: 15109
SEQ ID NO 1
LENGTH: 9025608
TITLE OF INVENTION: NOVEL POLYNUCLEOTIDES
                                                                                                                                                                                                                                                                                                                                                                                           ORGANISM: Streptomyces avermitilis
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Sequence 1, Application US/09790988; Patent No. US20020127687A1; GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Query Match
Best Local Similarity 44.2%;
Matches 282; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                     ; NAME/KEY: misc_feature
; LOCATION: (4187715)
; OTHER INFORMATION: a, t,
US-10-156-761-1
```

```
; LOCATION: (1)..(3759)
US-10-156-761-2268
 NAME/KEY: CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Search
Job tim
                                                                                                                                                 δλ
                                                                                                                                                                                    셤
                                                                                                                                                                                                                         à
                                                                                                                                                                                                                                                         g
                                                                                                                                                                                                                                                                                               οy
                                                                                                                                                                                                                                                                                                                                  a
                                                                                                                                                                                                                                                                                                                                                                       ò
                                                                                                                                                                                                                                                                                                                                                                                                          g
                                                                                                                                                                                                                                                                                                                                                                                                                                                 ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      음
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ŏ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    241021 TGAGATTATTAGTGATATTGAACTATTTTCTAGAGAAGTGACCTGTCCTATTATTTCAAT 240962
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               240961 AACAGGGACTAATGGAAAAAGTACTGTAGCTACCATGATTGAAAAAATTGCAAAAAATC 240902
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       240901 AGGATATAAAGCTTTTCTAGGTGGTAATATAGGTGTTCCCGTACTAGAAATACTTGATAA 240842
                                                                                                                                                                                                                                                                                                                                                                         ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      511
                                                                                                                                                                                                                                                                                                                                                                                                          332 GCGCATCTCCGGTGACATCGATCTTTCGCCCGCGAGGCGAAGGCCCCCGATCGTCGCCAT 391
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            392 CACCGGTTCCAACGCGAAGAGCACCGTGACCACCTGGTGGGCGGAAATGGCGGTGGCCGC 451
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            512 CGACATCGAGCTGTACGTGTTGGAGCTGTCGAGCTTCCAGCTGGGAAACCTGCGATCGCCT 571
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               452 GGACAAGCGTGTCGCCGTCGGCGCCAACCTCGGCACCCCGGCGCTCGACCTGCTGGCCGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      572 CAACGCCGAGGTGGCGACCGTGCTGAACGTCAGCGAAGACCATATGGATCGCTAC 626
                                                                                                                                                                                                                                                                                                                                                                         Gaps
                                                                                                                                                                                                                                                                                                                                                                       ö
                                                                                                                                                                                                                                                                                                                                    Length 640681;
               APPLICANT: WATANABE, HIDEMI
APPLICANT: WATANABE, MASAHIRA
APPLICANT: HATORI, MASAHIRA
APPLICANT: SAKAKI, YOSHIYUKI
TITLE OF INVENTION: GENOME DNA OF BACTERIAL SYMBIONT OF APHIDS
FILE REFERENCE: 081356/0159
CURRENT APPLICATION NUMBER: US/09/790, 988
CURRENT FILING DATE: 2001-02-23
PRIOR FILING DATE: 2000-04-07
                                                                                                                                                                                                                                                                                                                                Score 67; DB 10; Length 64
Pred. No. 8e-07;
0; Mismatches 180; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            APPLICANT: ISHIRAWA, JUN
APPLICANT: ISHIRAWA, JUN
APPLICANT: HORIKAWA, HIROSHI
APPLICANT: SAKAKI, YOSHIVUKI
APPLICANT: SAKAKI, YOSHIVUKI
APPLICANT: HATTORI, MASAHIRA
TITLE OF INVENTION: NOVEL POLYNUCLEOTIDES
FILE REFERENCE: 249-262
CURRENT APPLICATION NUMBER: US/10/156,761
CURRENT FILING DATE: 2002-05-29
PRIOR PLICATION NUMBER: JP 2001-204089
PRIOR FILING DATE: 2001-05-30
PRIOR APPLICATION NUMBER: JP 2001-272697
NUMBER OF SEQ ID NOS: 15109
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Sequence 2268, Application US/10156761 Publication No. US20030119018A1 GENERAL INFORMATION: APPLICANT: OMURA, SATOSHI APPLICANT: IKEDA, HARUO
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    TYPE: DNA
ORGANISM: Streptomyces avermitilis
FEATURE:
                                                                                                                                                                                                                                                                                                                                    4.68;
                                                                                                                                                                                                SOFTWARE: Patentin Ver. 2.1
SEQ ID NO 1
LENGTH: 640681
SHIGENOBU, SHUJI
                                                                                                                                                                                                                                                                                                                                Query Match 4.6
Best Local Similarity 49.3
Matches 175; Conservative
                                                                                                                                                                                                                                                         ; TYPE: DNA
; ORGANISM: Buchnera sp.
US-09-790-988-1
                                                                                                                                                                                  NUMBER OF SEQ ID NOS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   US-10-156-761-2268
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     SEQ ID NO 2268
                                                                                                                                                                                                                                                                                                                                                                                                            à
                                                                                                                                                                                                                                                                                                                                                                                                                                             g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ద
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ŏ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         g
```

```
1059
                                                                                                                                                                                                                                                                                                                         1119
                                                                                                                                                                                                                                                                                                                                                                                                         1179
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1180 TGCTTGGCCGTGACGCCGGGCTGATTGCCCAGGCACTGGGCAACGCGGTACCGCTGGTGC 1239
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        1240 GCGTCGCAACGCTGGACGAAGCAGTCCGGCAGGCCGCCGAGCTGGCCCGCGAAGGCGATG 1299
                                          ö
                                                                                                                                                              666
                                                                                                                                                                                                  604
                                                                                                                                                                                                                                                                                   664
                                                                                                                                                                                                                                                                                                                                                                 724
                                                                                                                                                                                                                                                                                                                                                                                                                                                 784
                                                                                                                      544
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 1000 AGGCCFGAGCTACTACGACGATTCCAAGGCCACCAACGTCGGCGCCCCTGGCGGCGA
                                                                                                                                                                                                                                                                1120 AGGGCGCCGATTTCCATGACCTGCGCGAGCCGGTCGCGCGCTTCTGCCGGGCGGTGGTAC
                                                                                880 CCAACGCGCTCGCCGCGCTGGCGCTGGGCCATGCGGTCGGCCTGCCGTTCGACGCCATGC
                                                                                                                      940 TCGGCGCGCTGAAGGCGTTTTCCGGCCTGGCTCATCGCTGCCAGTGGGTACGCGAGCGGC
                                                                                                                                                                                                  545 CCGACATCGCGCTGTGCGGGGGGTCGACGCCCCACACCGCCCCGCGCGTTGCGGGGAAGC
                                                                                                                                                                                                                                                                                                                           1060 TCGAGGGGCTGGGTGCCGACATCGACGGCAAGCTGGTGCTGCTCGCCGGCGGAGACGGCA
                                                                                                                                                                                                                                                                                                                                                                                                                                                 Gaps
                                          ö
  Length 3759;
                                          Indels
Score 66.2; DB 14;
Pred. No. 1.6e-06;
0; Mismatches 243;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      1300 CGGTGCTGTTGTCGCCGGCCTGCGCGAGCCTGGAC 1334
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              905 CGCTGCTGGTCGGCTCGGTGCAGACCGACCTGGGC 939
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     cch completed: August 14, 2003, 04:40:17 time : 1536 secs
  Query Match
Best Local Similarity 46.6%;
Matches 212; Conservative
```

THIS PAGE BLANK (USPTO)

217.2 15.0 928 29 BZ567557 179 12.3 452 10 BE184674 69.4 4.8 925 29 CNS0091P 67.2 A 6 665 29 CNS000ND	9 66.4 4.6 935 29 CNSONOMK ALCOGOS1 10 63.6 4.4 1538 29 AG030607 AG030607	11 62.6 4.3 925 29 CNSOUGLP ALOSSO13 12 61.6 4.2 58 14 CD443549 CD4443549 13 61.6 4.2 68 14 CD44331 CD444231 14 61.6 4.2 809 14 CD434773 CD434773	60.6 4.1 629 14 CD45320	60 4.1 638 14 CD453954 CD453954 60 4.1 639 14 CD442177 CD445177 60 4.1 664 14 CD445010 CD445010	60 4.1 661 14 CD434039 CD404039 60 4.1 661 14 CD435329 CD435329 60 4.1 678 14 CD444249 CD444249	60 4.1 683 14 CD442370 CD442370 60 4.1 691 14 CD443900 CD443900 60 4.1 704 14 CD434510 CD434510	29 60 4.1 720 14 CD444748 CD444748 EDL01N0443 30 60 4.1 778 14 CD440350 CD440350 ELO1N0553 31 60 4.1 771 14 CD440418 CD440418 ELO1N0554 32 60 4.1 772 14 CD434074 CD440418 ELO1N0318	60 4.1 7/8 14 CD434432 CD444432 60 4.1 791 14 CD438326 CD438326 60 4.1 797 14 CD437839 CD437839 60 4.1 797 14 CD437839 CD437839	60 4.1 809 14 CD438146 CD433802 CD433802 60 4.1 810 14 CD438146 CD	60 4.1 820 14 CD43/826 CD43/826 60 4.1 825 14 CD434362 CD4343436 60 4.1 828 14 CD440326 CD440326 60 4.1 846 14 CD440328 CD43038	44 60 4.1 854 14 CD437688 CD437688 45 60 4.1 859 14 CD439464 CD439464	ALIGNMENTS	RESULT 1 BEZ571116/C BEZ579116 892 bp DNA linear GSS 17-DEC-2002 DRETAITTON meth 6205 v2 meth Decuidaments aprilitings denomic clone meth 6205.	genomic survey sequence. BZ579116 BZ579116.1 GI:27214177	EXWORDS GSS. OURCE Pseudomonas aeruginosa ORGANISM Pseudomonas aeruginosa Bacteria; Proteobacteria; Gammaproteobacteria; Pseudomonadales;	Pseudomonadaceae: Pseudomonas.  REFERENCE 1 (bases 1 to 892) AUTHORS Spencer, D.H., Raymond, C.K., Smith, B.E., Sims, B.E., Hastings, M.,	Burns,J.L., Kaul,R. and Olsen,M.V. Whole-Genome-Sequence variation among multiple isol Psedomonas aeruginosa library	JORNAL J. Bacteriol., (2002) In press COMMENT Contact: Chris K. Raymond Genome Center	University of Washington Box 352145, Seattle, WA 98105-2145, USA Tel: 206221654	Fax: 2066857244 Email: craymond@u.washington.edu Class: shofgun. FEATURES Location/Qualifiers
0 6	ט ע	·									***; ;*		RELO	AC		RE				
5.1.6 Compugen Ltd.		Search time 2899 Seconds (without alignments) 12156.430 Million cell updates/sec	.tgttgagccggcacggcatc 1450		ues verconos												results predicted by chance to have a . to the score of the result being printed, of the total score distribution.		Description	B2579116 msh2_6205 B2568959 pacs2-164 B2559806 pacs2-164 B2550283 pacs1-60_
GenCore version 5. Copyright (c) 1993 - 2003 Co	OM nucleic - nucleic search, using sw model	Run on: August 14, 2003, 01:43:39 ; Search (without 12156.4;	Title: US-09-701-229-1 Perfect score: 1450 Sequence: 1 cytgctgatcggcctcgcca	Scoring table: IDENTITY_NUC Gapop 10.0 , Gapext 1.0	Searched: 22781392 seqs, 12152238056 residues	eq length eq length	Post-processing: Minimum Match 0% Maximum Match 100% Listing first 45 summaries	Database : EST:* 1: em_estba:* 2: em_estbum:*				13: go_est4:* 14: gb_est5:* 15: em_estfun:*	16: em_estom:* 17: em_gss_hum:* 18: em_gss_lvv:* 19: em_gss_pln:* 20: em_gss_pln:*	8 8 8	24: em_gss_rod:* 25: em_gss_rod:* 26: em_gss_phg:* 27: em_gss_vrl:*	gb_gss1:* gb_gss2:*	Pred. No. is the number of results predic score greater than or equal to the score and is derived by analysis of the total s		Result No. Score Match Length DB ID	c 1 643.6 44.4 892 29 BZ579116 c 2 638.2 44.0 1445 29 BZ568959 3 382.4 26.4 1171 29 BZ559806 c 4 232.8 16.1 1194 29 BZ550283

sedneuce

survey

```
pacs2-164_8171, genomic
       BZ568959.1 GI:27202799
                                                                                                                                                                                                                                                                                                   Similarity
                                                                                                                                                                                                                                                                   ø
                                                                                                                                                                                                                                                                  308
                                                                                                                                                                                                                                                                                                          684;
                                                                                                                                                                                                                                                                                                                                                                                            515
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              695
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              469
                                                                                                                                                                                                                                                                                                                                                                                                                                                              635
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               755
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                409
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                815
                                                                                                                                                                                                                                                                                            Query Match
                                                                                                                                                                                                                                                                                                   Best Local
Matches 68
                                                                                                                                                                                                                                                                 BASE COUNT
ORIGIN
       ACCESSION
VERSION
KEYWORDS
SOURCE
                                       ORGANISM
                                                                         AUTHORS
                                                                                                        JOURNAL
                                                                 REFERENCE
                                                                                                                                                                                  FEATURES
                                                                                         TITLE
                                                                                                                 COMMENT
                                                                                                                                                                                                                                                                                                                           ð
                                                                                                                                                                                                                                                                                                                                          a
                                                                                                                                                                                                                                                                                                                                                           ò
                                                                                                                                                                                                                                                                                                                                                                           g
                                                                                                                                                                                                                                                                                                                                                                                                          g
                                                                                                                                                                                                                                                                                                                                                                                                                                            g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                            a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               g
                                                                                                                                                                                                                                                                                                                                                                                            à
                                                                                                                                                                                                                                                                                                                                                                                                                             ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                             ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ò
                                                                                                                 ñ
                                                                                                                                190
                                                                                                                                                771
                                                                                                                                                                 250
                                                                                                                                                                                712
                                                                                                                                                                                                 310
                                                                                                                                                                                                                 653
                                                                                                                                                                                                                                370
                                                                                                                                                                                                                                                  593
                                                                                                                                                                                                                                                                 430
                                                                                                                                                                                                                                                                                  533
                                                                                                                                                                                                                                                                                                   490
                                                                                                                                                                                                                                                                                                                 473
                                                                                                                                                                                                                                                                                                                                  550
                                                                                                                                                                                                                                                                                                                                                  413
                                                                                                                                                                                                                                                                                                                                                                   610
                                                                                                                                                                                                                                                                                                                                                                                                    670
                                                                                                                                                                                                                                                                                                                                                                                                                    293
                                                                                                                                                                                                                                                                                                                                                                                                                                    730
                                                                                                                                                                                                                                                                                                                                                                                    353
                                                                                                                                                                                                                                                                                                                                                                                                                                                     233
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      173
                                                                                                                                                                                                                                                                                                                                                                                                                                                                    731 TACCGTGCCGTGCTGGTCGTTCGGCCTGAACAAGCCGGACTTCAAGGCTTTCGGCCTGAT 790
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     CGAGGAAGACGGCCAGAAGTGGCTGGCGTTCCAGTTCGACAAGCTGCTGCCGGTTGGCGA 850
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              GCGCCGCGCGTTTCGCCGTGGTCGATACCCGAGAGACCCGCCGGAGCTGGCCAC
                                                                                                                                        CIGCICCGCCCGCGAACTCTAIGTCAGCCCCGGCTTGTCGCTGCGCACCCCTGCGCTGGT
                                                                                                                                                                                                          TIGETCCGCCCGCGAACTITACGTCAG-CCCGGCTTGTCGTTGCGCACCNCCGCGCTGGT
                                                                                                                                                                                                                                ACAGGCCGCCGCGAAAGGCGTGCGCATCTCCGGTGACATCGATCTTCGCCCCGCGAGGC
                                                                                                                                                                                                                                                                        GCTGGAAACCTGCGATCGCCTCAACGCCGAGGTGGCGACCGTGCTGAACGTCAGCGAAGA
                                                                                                                                                                                                                                                                                                                                                                                                                                   CGGTGCCCGCCAGGTCGTGATCGCGCCGATGCCCTGACCCGACCGCTGATCGCCGA
                                                                                                                                                                CCTGCGTGCCCAGTATCCGCAGGTGGAAGTGCGTTGCGGCGAACTCGACGCCGAGTTCCT
                                                                                                                                                                                                                                         GAAGGCCCCGATCGTCGCCATCACCGGTTCCAACGCGAAGAGCACCGTGACCACCCTGGT
                                                                                                                                                                                                                                                                                                                                  GGCGCTCGACCTGCTGGCCGACGATCGAGCTGTACGTGTTGGAGCTGTCGAGCTTCCA
                                                                                                                                                                                                                                                                                                                                                                                                   CCATATGGATCGCTACGACGGCATGGCTGACTACCACCTGGCCAAGCACCGGATCTTCCG
                                                                                                                 Gaps
                                                        Whole genomic shotgun
                                                                                                                 4;
                                                                                                29; Length 892;
                                                                         others
                                                                                                                 44; Indels
       aeruginosa"
                                                                                                         .2e-118;
                             /db_xref="taxon:287"
/clone="msh2_6205"
/clone=lib="msh2"
/note="Environmental isolate.
                                                                                                DB
                                                                                               Score 643.6; D
Pred. No. 7.2e-
0; Mismatches
                                                                         ų
                                                                         160
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ACTGAAGATCCGTGGCGCCCACAACTATT 879
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       84
      /organism="Pseudomonas
/mol_type="genomic DNA"
/strain="MSH"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               276 g
                                                                                                44.48;
93.68;
                                                               11brary."
277 c
                                                                                              Query Match
Best Local Similarity 93.6
Matches 701; Conservative
                                                                         ಥ
                                                                        173
                                                                                                                                131
                                                                                                                                                               191
                                                                                                                                                                               770
                                                                                                                                                                                                               711
                                                                                                                                                                                                                                311
                                                                                                                                                                                                                                                652
                                                                                                                                                                                                                                                                                592
                                                                                                                                                                                                                                                                                                                532
                                                                                                                                                                                                                                                                                                                                491
                                                                                                                                                                                                                                                                                                                                                 472
                                                                                                                                                                                                                                                                                                                                                                                                                                                   292
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    232
                                                                                                                                                                                                251
                                                                                                                                                                                                                                                                 371
                                                                                                                                                                                                                                                                                                 431
                                                                                                                                                                                                                                                                                                                                                                  551
                                                                                                                                                                                                                                                                                                                                                                                   412
                                                                                                                                                                                                                                                                                                                                                                                                  611
                                                                                                                                                                                                                                                                                                                                                                                                                   352
                                                                                                                                                                                                                                                                                                                                                                                                                                   671
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     791
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      851
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      112
                                                                      BASE COUNT
ORIGIN
                                                                                                                                              셤
                                                                                                                                                               ò
                                                                                                                                                                              셤
                                                                                                                                                                                                              g
                                                                                                                                                                                                                                               ద
                                                                                                                                                                                                                                                                              g
                                                                                                                                                                                                                                                                                                                요
                                                                                                                                                                                                                                                                                                                                                 g
                                                                                                                                ð
                                                                                                                                                                                               ö
                                                                                                                                                                                                                               õ
                                                                                                                                                                                                                                                                 ŝ
                                                                                                                                                                                                                                                                                                 õ
                                                                                                                                                                                                                                                                                                                                à
                                                                                                                                                                                                                                                                                                                                                                  ò
                                                                                                                                                                                                                                                                                                                                                                                 g
                                                                                                                                                                                                                                                                                                                                                                                                 ŏ
                                                                                                                                                                                                                                                                                                                                                                                                                  g
                                                                                                                                                                                                                                                                                                                                                                                                                                   ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                   g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    qq
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ð
```

BZ568959 1445 bp DNA linear GSS 17-DEC-2002 pacs2-164\_8171.y2 pacs2-164 Pseudomonas aeruginosa genomic clone

RESULT 2 BZ568959/c LOCUS DEFINITION

```
4
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      708
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             470
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        454
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        514
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            530
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           634
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            694
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             410
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                350
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              754
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                814
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    CTATICCAACGCGCTCGCCGCGCGCTGGCGCTGCGGTCGGCCTGCCGTTCGACGC 934
                                                                                   Hastings, M.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Gammaproteobacter1a; Pseudomonadales;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          CCTGAACAAGCCGGACTTCAAGGCTTTCGGCCTGATCGAGGAAGACGGCCAGAAGTGGCT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           CATCGAGCTGTACGTGTTGGAGCTGTCGAGCTTCCAGCTGGAAACCTGCGATCGCCTCAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           575 CGCCGAGGTGGCGACCGTGCTGAACGTCAGCGAAGACCATATGGATCGCTACGACGGCAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             GGCTGACTACCACCTGGCCAAGCACCGGATCTTCCGCGGGTGCCCGCCAGGTCGTGGTGAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                TCGCGCCGATGCCCTGACCCGACCGCTGATCGCCGATACCGTGCCGTGCTGGTCGTTCGG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                CCTGAACAAGCCGGACTTCAAGGCTTTCGGCCTGATCGAGGAAGACGGCCAGAAGTGGCT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   GGCGTTCCAGTTCGACAAGCTGCTGCCGGTTGGCGAACTGAAGATCCGTGGCGCCCACAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                       shotgun
                                                                                                                    of
                               Bacteria; Proteobacteria; Gammaproteobacteria; Pseudomon
Pseudomonadaceae; Pseudomonas.
1 (bases 1 to 1445)
Spencer, D.H., Raymond, C.K., Smith, E.E., Sims, E.E., Hasti
Burns, J.L., Kaul, R. and Olsen, M.V.
Whole-Genome-Sequence variation among multiple isolates
Psedomonas aeruginosa library
J. Bacteriol., (2002) In press
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         DB 29; Length 1445;
                                                                                                                                                                                                                                                                                                                                                                                                   /clone="pacs2-164_8171"
/clone_lib="pacs2-164"
/note="clinical isolate 2-164 Whole genomic
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                       8
                                                                                                                                                                                                                                                                                             Location/Qualiflers
1. .1445
7. Coganism="Pseudomonas aeruginosa"
7.mol_type="genomic DNA"
/strain="2-164"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      44.0%; Score 638.2; DB 29.1arity 98.7%; Pred. No. 9.2e-117.
Conservative 0; Mismatches 5.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                     u
                                                                                                                                                                                   Genome Center
University of Washington
Box 352145, Seattle, WA 98105-2145,
Tel: 2062216954
Fax: 2066857244
                                                                                                                                                                                                                                                                                                                                                                                                                                                                       293
                                                                                                                                                                                                                                                                Email: craymond@u.washington.edu
Class: shotgun.
                                                                                                                                                                                                                                                                                                                                                                                     /db_xref-"taxon:287"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                     412 g
Pseudomonas aeruginosa
                   Pseudomonas aeruginosa
                                                                                                                                                                                                                                                                                                                                                                                                                                                                     424 c
                                                                                                                                                                                                                                                                                                                                                                                                                                                       library
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   875
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    349
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ŏ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    요
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ò
```

1174

346

1234

406

466

```
BZ550283 11-DEC-2002 pacs1-60_2584.x1 pacs1-60 Pseudomonas aeruginosa genomic clone pacs1-60_2584, genomic survey sequence.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   1223 CGCGGTACCGCTGGTGCGCGTCGCAACGCTGGACGAAGCAGTCCGGCAGGCCGCGAGCT 1282 | 1111 | 1111111 | 111111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                1163 CTGCCGGGCGGTGGTACTGCTTGGCCGTGACGCCGGGCTGATTGCCCCAGGCACTGGGCAA 1222
                                                                                                                                                                                                                                    1235 GGTGCGCGTCGCAACGCTGGACGAAGCAGTCCGGCAGGCCGCCGAGCTGGCCCGCGAAGG 1294
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Pseudomonas aeruginosa
Bacteria; Proteobacteria; Gammaproteobacteria; Pseudomonadales;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         641 -TAACGAGCTGTGGTCCTG-TTTGCCGGGCCACCGATCTAAATCCCCAGGCCGTGGGCAA
                                                       287 CGCAAGGCCCCGATTTTCATGACCTGCCCCAGCCGGTCGCCGCTTCTGCCGGGCGGT
                                                                                                                                 1175 GGTACTGCCTTGGCCGTGACGCCGGGCTGATTGCCCAGGCACTGGGCAACGCGGTACCGCT
                                                                                                                                                            407 GGTGCGCGTCACAACGCTGGACGAAGCATTTCCGGAGGCCGGCGAGCTGGCCCGCGAAAG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        1115 CGGCAAGGCCCCGATTTCCATGACCTGCGCGAGCCGGTCGCGCGCTTCTGCCGGGCGGT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Spencer, D.H., Raymond, C.K., Smith, E.E., Sims, E.E., Hastinspencer, D.H., Raymond, C.K., Smith, E.E., Sims, E.E., Hastinguns, J.L., Kaul, R. and Olsen, M.V.
Whole-Genome-Sequence variation among multiple isolates
Psedomonas acruginosa library
J. Bacteriol., (2002) In press
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               /clone="pacs1-60_2584"
/clone_lib="pacs1-60"
/note="clinical isolate 1-60 Whole
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         aeruginosa"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Genome Center
University of Washington
Box 352145, Seattle, WA 98105-2145,
TTE1: 206216954
Fax: 2066857244
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   0; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     314
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Email: craymond@u.washington.edu
Class: shotgun.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      /organism="Pseudomonas
/mol_type="genomic DNA"
/strain="1-60"
/db_xref="taxon:287"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Pseudomonadaceae; Pseudomonas.
1 (bases 1 to 1194)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     298 g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                J. Bacteriol., (2002) In
Contact: Chris K. Raymond
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       BZ550283
BZ550283.1 GI:27153864
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Pseudomonas aeruginosa
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               16.1%;
83.0%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  349 c
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              .1194
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            library.
                                                                                                                                                                                                                                                                                                                                            1295 CGAT 1298
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Similarity
                                                                                                                                                                                                                                                                                                                                                                                              467 CGAT 470
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       æ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   289;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Best Local
Matches 28
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   source
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  BASE COUNT
ORIGIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               LOCUS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         BZ550283/c
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ORGANISM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ACCESSION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     VERSION
KEYWORDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  REFERENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           AUTHORS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              JOURNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        FEATURES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                              RESULT 4
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               TITLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         COMMENT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         SOURCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                δŏ
                                                                          g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ŏ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  음
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         δy
                                                                                                                                                                             g
                                                                                                                                                                                                                                    οy
                                                                                                                                                                                                                                                                                     셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          g
                                                                                                                                 οy
                                                                                                                                                                                                                                                                                                                                            ò
                                                                                                                                                                                                                                                                                                                                                                                                                                       BZ559806 1171 bp DNA linear GSS 17-DEC-2002 pacs2-164_1863.x1 pacs2-164 Pseudomonas aeruginosa genomic clone pacs2-164_1863, genomic survey sequence.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         1054
                                                                                                                                                          GCGGCAGGGCGTGAGTACTACGACGATTCCAAGGCCACCAACGTCGGCGCCGCCCTGGC 1054
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 GCCGATCGAGGGCTGGGTGCCGACATCGACGCCAAGCTGGTGCTGCTCGCCGGCGGAGA 1114
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            106
                                                                               934
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            107 CATGCTCGGCGCGCTGAAAGCGTCTTGCGGACTGGCTCATTGCTGCCGCAGTGGGTACGCGA 166
CTATTCCAACGCGCTCGCCGCGCTGGCGCTGGGCCATGCGGTCGGCCTGCCGTTCGACGC 230
                                                                                                                                                                                     169 GCGGCAGGCGTGAGCTACTACGACGATTCCAAGGCCACCAACGTCGGCGCCGCCCTGGC 110
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             227 GGCGATCGAGGGCTGGGTGCCGACATCGACGCAAGCTGGTGCTGATCGCCGGCGGAAA
                                                    CATGCTCGGCGCGCTGAAGGCGTTTTCCGGCCTGGCTCATCGCTGCCAGTGGGTACGCGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Bacteria; Proteobacteria; Gammaproteobacteria; Pseudomonadales;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   CATGCTCGGCGCGCTGAAGGCGTTTTCCGGCCTGGCTCATCGCTGCCAGTGGGTACGCGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         GCGGCAGGGCGTGAGGTACGACGATTCCAAGGCCACCAACGTCGGCGCCGCCCTGGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  167 GCGCAGGCGTGAGCTACTACGACGATTCCAAGGCCACCAACGTCGGCGCCCCTGGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        875 CTATTCCAACGCGCTCGCCGCTGGCGCTGGGCCATGCGGTCGGCCTGCCGTTCGACGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      0; Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          /clone="pacs2-164_1863"
/clone_lib="pacs2-164"
/note="clinical isolate 2-164 Whole genomic shotgun
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Spencer, D. H., Faymond, C. K., Smith, E. E., Sims, E. E., Hastings Burns, J. L., Kaul, R. and Olsen, M. V.
Whole-Genome-Sequence variation among multiple isolates of bedomonas aeruginosa library
J. Bacteriol., (2002) In press
Contact: Chris K. Raymond
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     DB 29; Length 1171;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Score 382.4; DB 29; Length
Pred. No. 4.9e-66;
0; Mismatches 26; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               aeruginosa"
                                                                                                                                                                                                                                                               1055 GGCGATCGAGGGGCTGCGTGCCGACATCGACGG 1087
                                                                                                                                                                                                                                                                                        109 GGCGATCGAGGGCTGGGTGCCGACATCGACGG 77
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ų
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   University of Washington
Box 352145, Seattle, WA 98105-2145,
Tel: 2062216954
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        298
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Fax: 2066857244
Email: craymond@u.washington.edu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  /mol_type="genomic DNA"
/strain="2-164"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1. .1171
/organism="Pseudomonas
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Pseudomonadaceae; Pseudomonas.
1 (bases 1 to 1171)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      /db_xref="taxon:287"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Class: shotgun.
Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        329
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   BZ559806.1 GI:27176698
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Pseudomonas aeruginosa
Pseudomonas aeruginosa
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               tch 26.4%;
al Similarity 93.9%;
398; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        O
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            library."
325 c
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Genome Center
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             BZ559806
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Query Match
Best Local S
Matches 398
289
                                                 935
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                935
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         995
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               1055
                                                                                                                                                          995
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ACCESSION
VERSION
KEYWORDS
SOURCE
ORGANISM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                     DEFINITION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  BASE COUNT
                                                                                                                                                                                                                                                                                                                                                                                              RESULT 3
BZ559806
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               REFERENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        AUTHORS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 JOURNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     FEATURES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            TITLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ORIGIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            qq
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        a
                                              ò
                                                                                                   g
                                                                                                                                                       οχ
                                                                                                                                                                                                   Dp
                                                                                                                                                                                                                                                             δ
                                                                                                                                                                                                                                                                                                              d
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ద
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      δλ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     셤
```

1162

642

5

Gaps

;

Length 1194;

genomic shotgun

```
/organism="Homo saplens"
/mol_type="mRNA"
/Mol_type="mRNA"
/db_xref="texon:9606"
/dev_stage="Adult"
/clone_lib="H10688"
/note="Organ: head_neck; Vector: pucl8; Site_1: SmaI;
Site_2: SmaI; A min1-library was made by cloning products
Site_2: SmaI; A min1-library was made by cloning products
Site_1s Form ORESTES PCR (U.S. Letters Patent application
No. 196,716 - Ludwig Institute for Cancer Research)
profiles into the pUC 18 vector. Reverse transcription of
tissue mRNA and cDNA amplification were performed under
low stringency conditions."
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Mammalia; Eutheria; Primates; Catarrhini; Hominidae; Homo.
1 (bases 1 to 452)
1 (bases 1 
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Fax: +55-11-2707001

Email: asimpson@ludwig.org.br
This sequence was derived from the FAPESP/LICR Human Cancer Genome
Project. This entry can be seen in the following URL
(http://www.ludwig.org.br/scripts/gethtml2.pl?tl=&t2=PM4-HT0688-050
500-002-d10&t3=2000-05-05&t4=1)
Seq primer: puc 18 forward
High quality sequence start: 26
High quality sequence start: 26
Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         BE184674 11near EST 22-JUN-2000 PM4-HT0688-050500-002-d10 HT0688 Homo sapiens cDNA, mRNA sequence.
                                                                                                                                                                                            1028 GGCCACCAACGTCGCCGCCCCCTGGCGGCGATCGAGGGGCTGGGTGCCGACATCGACGG 1087
                                                                                                                                                                                                                          Contact: Simpson A.J.G.
Laboratory of Cancer Genetics
Ludwig Institute for Cancer Research
Rua Prof. Antonio Prudente 109, 4 andar, 01509-010, Sao Paulo-SP,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                \operatorname{SImpson}, A \cdot J \cdot Shotgun sequencing of the human transcriptome with ORF expressed
                                                                                     969 GCTCATCGCTGCCAGTGGGTACGCGAGCGGCAGGGCGTGAG-CTACTACGACGATTCCAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Proc. Natl. Acad. Sci. U.S.A. 97 (7), 3491-3496 (2000)
20202663
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Length 452;
                                                                                                                                                                                                                                                                                                        1088 CAAGCTGGTGCTCGCCGGCGGAGACGCCAAGGGCG 1125
                                                                                                                                                                                                                                                                                                                                                       83
                                                                                                                                                                                                                                                                                                                                    119 CAACCTCATGCTGTGCGCAGACGACGACAAGGGGG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Score 179; DB 10;
Pred. No. 9.4e-26;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              BE184674.1 GI:8663858
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                12.3%;
73.3%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Homo sapiens (human)
Homo sapiens
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        rel: +55-11-2704922
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Query Match
Best Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   10737800
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  91
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Brazil
                                 299
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          DEFINITION
ACCESSION
VERSION
KEYWORDS
SOURCE
ORGANISM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                BASE COUNT
ORIGIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 MEDLINE
PUBMED
COMMENT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  REFERENCE
AUTHORS
                                                                                                                                                                                                                                                                                                                                                                                                                                     RESULT 6
BE184674
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              JOURNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          FEATURES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         TITLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            LOCUS
                                                                                   à
                                                                                                                                       g
                                                                                                                                                                                            ò
                                                                                                                                                                                                                                           g
                                                                                                                                                                                                                                                                                                     ò
                                                                                                                                                                                                                                                                                                                                                       g
                                                                                                                                                                                                                                                                                                                                                                                                      BZ567557 linear GSS 17-DEC-2002 pacs2-164_7094.y2 pacs2-164 Pseudomonas aeruginosa genomic clone pacs2-164_7094, genomic survey sequence.
GGCCCGCGAAGCGATGCGGTGTTGTCGCCGGCCTGCGCGGGCCTGGACATGTTCAA 1342
                                                                                                              1402
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ä
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      CGGTGCCCGCCAGGTCGTGTGAA-TCGCGCCGATGCCCTGACCCGACCGCTGATCGCCG 729
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ATACCGTGCCGTCGTCGTCGCCTGAACAACCCGGACTTCAAGGCTTTCGCCTGA 789
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      849
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               539 CGTTGGCCGTCAGGTCGTGGTTAATTCGCGCTGATGTCCTGACCCGACCGCTGATCGTCC 480
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  606
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              910 ATGCGGTCGGCCTGCCGTTCGAC-GCCATGCTCGGCGCGCGCTGAAGGCGTTTTTCCGGCCTG 968
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Pseudomonas aeruginosa
Bacteria; Proteobacteria; Gammaproteobacteria; Pseudomonadales;
Pseudomonadaceae; Pseudomonas
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Pseudomonnadace..., 16 to 228)

1 (bases 1 to 928)

Spencer, D.H., Raymond, C.K., Smith, E.E., Sims, E.E., Hastings, M., Burns, J.L., Kaul, R. and Olsen, M.V.

Burns, J.L., Kaul, R. and Olsen, M.V.

Whole-Genome-Sequence variation among multiple isolates of Psedomonas aeruqinosa library

J. Bacteriol., (2002) In press
                                                                                                      523 GGCCCTCGAAGACGATGCGGTGCTGTTGTAGCCGCCCTGCGCGAGCCTGTACATGTTCAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 790 TCGAGGAAGACGGCCAGAAGTGGCTGGCGTTCCAGTTCGACAAGCTGCTGCCGGTTGGCG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          850 AACTGAAGATCCGTGGCGCCCACAACTATTCCAACGCGCCTCGCCGCGCTGGCGCTGGGCC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      /clone="pacs2-164_7094"
/clone_lib="pacs2-164"
/note="clinical isolate 2-164 Whole genomic shotgun
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       .,
Έ
                                                                                                                                                                                                               Length 928;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Score 217.2; DB 29; Length
Pred. No. 2.8e-33;
0; Mismatches 128; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        /organism="Pseudomonas aeruginosa"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ų
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Genome Center
University of Washington
Box 352145, Seattle, WA 98105-2145,
Tel: 2062216954
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     226
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      /mol_type="genomic DNA" /strain="2-164"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Fax: 2066857244
Email: craymond@u.washington.edu
Class: shotgun.
Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   /db_xref-"taxon:287"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     236 g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 BZ567557
BZ567557.1 GI:27199005
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Pseudomonas aeruginosa
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Match 15.0%;
Local Similarity 71.4%;
les 327; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         library."
1 228 c
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ø
                                                                                                      1343
1283
                                                                                                                                                                                                               1403
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        419
                                                                                                                                                                                                                                                                 403
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             730
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          VERSION
KEYWORDS
SOURCE
ORGANISM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               source
                                                                                                                                                                                                                                                                                                                                                    RESULT 5
BZ567557/c
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Best Loca
Matches
                                                                                                                                                                                                                                                                                                                                                                                                                               DEFINITION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  BASE COUNT
ORIGIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ACCESSION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        REFERENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 AUTHORS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          JOURNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   FEATURES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Query
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      TITLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         COMMENT
                                               g
                                                                                                            ò
                                                                                                                                                        g
                                                                                                                                                                                                               5
  å
                                                                                                                                                                                                                                                                 유
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       õ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ò
```

643

990

583

1110

703

763

염

ð g

g ò g à 셤 ð g ð

à 임 ò

```
CNSO70MR 965 bp DNA linear GSS 06-JUL-2001 T3 end of clone AZOAA010F07 of library AZOAA from strain CBS 712 of Kluyveromyces marxianus, genomic survey sequence.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     111 GAGACGGCAAGGGCGCCGATTTCCATGACCTGCGCGGAGCCGGTCGCGCGCTTCTGCCGGG 1170
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            1171 CGGTGGTACTGCTTGGCCGTGACGCCGGGCTGATTGCCCCAGGCACTGGGCAACGCGGTAC 1230
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 1231 CGCTGGTGCGCGTCGCAACGCTGGACGAAGCAGTCCGGCAGGCCGCCGAGCTGGCCCGCG 1290
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Direct Submission
Submitted (08-SEP-2000) Genoscope - Centre National de Sequencage,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       2 (bases 1 to 965)
Llorente, B., Malpertuy, A., Blandin, G., Artiguenave, F., Wincker, P. and Dujon, B.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Bukaryota; Fung1; Ascomycota; Saccharomycotina; Saccharomycetes;
Saccharomycetales; Saccharomycetaceae; Kluyveromyces.
1 (bases 1 to 965)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Souciet, J. L., Aigle, M., Artiguenave, F., Blandin, G.,
Bolotin-Fukuhara, M., Bon, E., Brottler, P., Casaregola, S.,
de-Montigny, J., Dujon, B., Durrens, P., Lepingle, A., Llorente, B.,
Malpertuy, A., Neuveglise, C., Ozier-Kalogeropoulos, O., Potier, S.,
Saurin, W., Tekala, F., Toffano-Nioche, C., Wesolowski-Louvel, M.,
Wincker, P. and Weissenbach, J.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Genomic exploration of the hemiascomycetous yeasts: 1. A set of yeast species for molecular evolution studies
FEBS Lett. 487 (1), 3-12 (2000)
                                                                                                                                                                                                                                                                                                                                                                                                                                                931 ACGCCATGCTCGGCGCGCTGAAGGCGTTTTTCCGGCCTGGCTCATCGCTGCCAGTGGGTAC
                                                                                                                                                                                                                                            991 GCGAGCGGCAGGGCGTGAGCTACTACGACGATTCCAAGGCCACCAACGTCGGCGCGCCC
                                                                                                                                                                                                                                                                                                                                                               1051 TGGCGGCGATCGAGGGGCTGGGTGCCGACATCGACGGCAAGCTGGTGCTGCTCGCCGGCG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     704 TSTSSSSYSSGSKSSTBSSGSBSSSGSSSSSTSSBBSCTSTSSSSSSSSTSSSTCSCCTC
                                                                                                                                                           4,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Genomic exploration of the hemiascomycetous yeasts: 12
                                                                                                       Length 925;
                             511 others
                                                                                                                                                        Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           1291 AAGGCGATGCGGTGCTGTTGTCGCCGGCCTGCGCGAGCCTGG 1332
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         880 KSSASSSSVSSSGSSGVSSNSSSASKSSSSGSVSSGSGSGSG 921
                                                                                                                                                        Conservative 194; Mismatches 146;
                                                                                                    Score 69.4; DB 29;
Pred. No. 0.00058;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Kluyveromyces marxianus var. marxianus
FEBS Lett. 487 (1), 71-75 (2000)
                             ų
                           172
                             5
  'note="end : TET3"
                           61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 AL423817.1 GI:12207011
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Kluyveromyces marxianus
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Kluyveromyces marxianus
                                                                                                       4.8%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         (bases 1 to 965)
                             61 c
                                                                                                                                  Best Local Similarity
                           120 a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Genoscope
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    20584711
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    11152876
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     AL423817
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 1115288
                                                                                                                                                        58;
                                                                                                          Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 CNS070MR/c
LOCUS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               DEFINITION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ORGANISM
                             BASE COUNT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          TITLE
JOURNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  PUBMED
REFERENCE
                                                                                                                                                        Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ACCESSION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 VERSION
KEYWORDS
SOURCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         REFERENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  AUTHORS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    MEDLINE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        AUTHORS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          JOURNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     MEDLINE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    REFERENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    AUTHORS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              JOURNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   PUBMED
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          TITLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      TITLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           RESULT
                                                      ORIGIN
                                                                                                                                                                                                                                                                                                                                                                 셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                    g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     임
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           δλ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         8
                                                                                                                                                                                                              ŏ
                                                                                                                                                                                                                                                             셤
                                                                                                                                                                                                                                                                                                                à
                                                                                                                                                                                                                                                                                                                                                                                                                     ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                LEADLITE SUBJECT CONTROL OF CONTR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Drosophila melanogaster genome survey sequence TET3 end of BAC # BACH1916 of RPCI-98 library from Drosophila melanogaster (fruit AL053013
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        TTTCCGGCCTGGCTCATCGCTGCCAGTGGGTACGCGAGCGGCAGGGCGTGAGCTACT-AC 1016
                                                                                                                                                                                81 CGCTGATGGCCTAGTGCATGCCCTGCTGGACCTTCGGTTAGGGCAA-CCGGACTTCAAAG 139
                                                   CGCTGATCGCCGATACCGTGCCGTGCTGGTCGTTCGGCCTGAACAAGCCGGACTTCAAGG 777
                                                                                                                                                                                                                                                                                                                                                               CTTTCGGCCTGATCGAGGAGGAGGCCAGAAGTGGCTGGCGTTCCAGTTCGACAAGCTGC
                                                                                                                                                                                                                                                             TGCCGGTTGGCGAACTGAAGATCCGTGGCGCCCACAACTATTCCAACGCGCTCGCCGCGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Drosophila melanogaster (fruit fly)
Drosophila melanogaster
Eukaryota; Metazoa; Arthropoda; Hexapoda; Insecta; Pterygota;
Neoptera; Endopterygota; Diptera; Brachycera; Muscomorpha;
Ephydroidea; Drosophilidae; Drosophila.
  Gaps
  3;
95; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           /organism="Drosophila melanogaster'
  Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    /mol_type="genomic DNA"
/db_xref="taxon:7227"
/clone="BACR19D16"
/clone_lib="RPCI-98"
  ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 AL053013.1 GI:4934461
Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Direct Submission
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                CGACATC 1082
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ||| |||
440 CGATATC 446
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Genoscope
269;
                                                                                                                                                                                                                                                                                                                                                                                                                   260
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     320
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        1017
                                                   718
                                                                                                                                                                                                                                                             838
                                                                                                                                                                                                                                                                                                              200
                                                                                                                                                                                                                                                                                                                                                                 888
                                                                                                                                                                                                                                                                                                                                                                                                                                                                    928
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     source
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ACCESSION
VERSION
KEYWORDS
SOURCE
ORGANISM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         DEFINITION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               REFERENCE
AUTHORS
  Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             RESULT 7
CNS0091P
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           JOURNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          FEATURES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   TITLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       COMMENT
```

AL066051.1 GI:4945019

```
VERSIÓN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ŝ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               õ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     g
           segref@genoscope.cns.fr - Web : www.genoscope.cns.fr)
This GSs is part of a random genomic sequencing program of thirteen yeast species: Saccharomyces bayanus var. uvarum, Saccharomyces extguus, Saccharomyces servazzii, Zygosaccharomyces rouxii, Saccharomyces retrained in actis var. lactis, Kluyveromyces thermotolerans, Kluyveromyces lactis var. narxianus, Pichia anngusta, Debaryomyces hansenii var. hansenii, Pichia sorbitophila, Candida tropicalis and Yarrowia lipolytica. Genomic inserts of 3 to 8 keywords for description of this sequence and for the sequence of the other extremity of this insert.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      976 GCTGCCAGTGGGTACGCGAGGGCGTGAGCTACTACGACGATTCCAAGGCCACCA 1035
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ñ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  1036 ACGTCGCCCCCCCCCCGCGCGATCGAGGGCTGGGTGCCGAC-----ATCGACGGCA 1089
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    1150 CGGTCGCGCGCTTCTGCCGGGCGGTG--GTACTGCTTGGCCGTGACGCCGGGCTGATTGC 1207
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      1267
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             GSS 03-JUN-1999
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    975
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    838 rcGGCGTGCCGGCCCGCGCGTGGGTCAGGGTCTGCGCGACCTCCACCTTSGCGSGCATC 779
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                479
 FRANCE. (E-mail
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Drosophila melanogaster genome survey sequence T7 end of BAC # BAC14NO9 of RPCI-98 library from Drosophila melanogaster (fruit AL066051
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            1090 AGCTGGTGCTCGCCGGCGGAGACGGCAAGGGCCCGATTTCCATGACCTGCGCGAGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              208 CCAGGCACTGGGCAACGCGGTACCGCTGGTGGCGTCGCAACGCTGGACGAAGCAGTCCG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  916 TCGGCCTGCCGTTCGACGCCATGCTCGGCGCGCTGAAGGCGTTTTCCGGCCTGGCTCATC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      718 ATYTTTTTTYGCGTTCTCYTCTWTGCGCGCCTTCGAGCACATCTTGTGGATCGCCGGAG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            598 AGCCATCGTGCTGGGAACCGACGTGACGTCGCCCAAGTCNTTGGCCGAGCACGCCCC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      538 GCATGTCCCCGTCGTCGTCATCGATGACTTGTCGCGAGAATGCATGGCCAAGGCAGTTCG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            GCAGGCCGCCGAGCTGCCCGCGAAGGCGATGCGGTGCTGTTGTCGCCCGGCCTGCGCGAG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      1328 CCTGGACATGTTCAAGAACTTCGAAGAACGCGGACGCCTGTTCGCCAAAGCCGTA 1382
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               .;
8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Length 965;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     others
rue Gaston Cremieux, CP 5706, 91057 EVRY cedex,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            11; Mismatches 230; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                       /note="similar to CAB08672 [ murD ]
1 putative frameshift(s)"
                                                                                                                                                                                                                                                                 /organism="Kluyveromyces marxianus"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         DB 29;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Score 67.2; DB 2
Pred. No. 0.0016;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                               /evidence=not_experimental
275 c 310 g 159
                                                                                                                                                                                                                                                                               /mol_type="genomic DNA" /strain="CBS 712"
                                                                                                                                                                                                                                                                                                                     /variety="marxianus"
/db_xref="taxon:4911"
/clone="Az0AA010F07"
/clone_llb="Az0AA"
/note="end : T3"
complement(<355. >836)
                                                                                                                                                                                                                                                                                                                                                                                                                     .>836)
                                                                                                                                                                                                                           Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       4.68;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         al Similarity 47.6
226; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                       misc_feature
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Query Match
Best Local S
Matches 226
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1268
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             BASE COUNT
ORIGIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   RESULT 9
CNS006XK
                                                                                                                                                                                                                             FEATURES
                                   COMMENT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                õ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ô
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            å
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         g
```

```
He list study consists that contains the list state of a betermination of this BAC-end sequence was carried out as part of a collaboration with the Berkeley Drosophila Genome Project (BDGP). The BDGP is constructing a physical map of the Drosophila melanogaster genome using these BACs. For further information please see http://www.fruitfly.org The BDGP Drosophila melanogaster BAC library was prepared by Kazutoyo Osoegawa and Aaron Mammoser in Pieter de Jong's laboratory in the Department of Cancer Genetics at the Roswell Park Cancer Institute in Buffalo, NY. The library is named RPCI-98 and was constructed by partial ECORI disestion of Drosophila DNA provided by the BDGP from the isogenic strain y2; on bw sp, the same strain used for the BDGP's Pl and BST libraries. A more detailed description of the library and how to order individual BAC clones, the entire library and how to order individual BAC clones, the entire library.

[illters for hybridization from the BACPAC Resource Center can be found at http://bacpac.med.buffalo.edu/drosophila_bac.htm.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             1042
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        1102
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Ĥ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     CGCCGGCGGAGACGCCAAGGCGCCGATTTCCATGACCTGCGCGAGCCGGTCGCGCGTT 1162
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          1223 CGCGGTACCGCTGGTGCGCGTCGCAACGCTGGACGAAGCAGTCCGGCAGGCCGCCGCCGAGCT 1282
                                                                                                                                                                                                                        Direct Submission
Submitted (02-JUN-1999) Genoscope - Centre National de Sequencage
BP 191 91006 EVRY cedex - FRANCE (E-mail : seqrefêgenoscope.cns.fr
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             CTGCCGGGCGGTGGTACTGCTTGGCCGTGACGCCGGGCTGATTGCCCAGGCACTGGGCAA 1222
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 615
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               675
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   982
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         735
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       496 SSTGTMCDMMVCGCGSCSMCRTSSGSTGCSTCCMYMSSSVSCCSCSGTCCGYCSSCTSCK 555
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 854
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             556 MCSCTYGCKGGGGGGGSTSCSSSSCCSBBSYSTCSCTBCTKCSSGCSTGSGCTGCCGGGG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               923 GCCGTTCGACGCCATGCTCGGCGCGCTGAAGGCGTTTTCCGGCCTGGCTCATCGCTGCCA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             983 GTGGGTACGCGAGCGCAGGGCGTGAGCTACTACGACGATTCCAAGGCCACCAACGTCGG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        1043 CGCCGCCCTGGCGGCGATCGAGGGGCTGCCGACATCGACGCCAAGCTGGTGCTGCT
                         Drosophila melanogaster (fruit fly)
Drosophila melanogaster
Eukaryota; Metazoa; Arthropoda; Hexapoda; Insecta; Pterygota;
Neoptera; Endopterygota; Diptera; Brachycera; Muscomorpha;
Ephydroidea; Drosophilidae; Drosophila.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        GGCCCGCGAAGGCGATGCGGTGCTGTTGTCGCCGGGCCTGCGGAGCCTGGAC 1334
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ï
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Length 935;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        250 others
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ttch 4.6%; Score 66.4; DB 29; Length sal Similarity 29.9%; Pred. No. 0.0023; 123; Conservative 108; Mismatches 180; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   /organism="Drosophila melanogaster"
/mol_type="genomic DNA"
/db_xref="taxon:7227"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        96 t
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       /clone="BACR14N09"
/clone_l1b="RPCI-98"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        162 g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                /note="end : T7
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        170 c
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Query Match
Best Local Similarity
                                                                                                                                                                                                Genoscope
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        257
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         949
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 961
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     1103
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   1163
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        1283
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         855
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  source
                                                         ORGANISM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        BASE COUNT
ORIGIN
                                                                                                                                                                                                                             TITLE
JOURNAL
                                                                                                                                                                                                AUTHORS
KEYWORDS
SOURCE
                                                                                                                                                                    REFERENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     FEATURES
                                                                                                                                                                                                                                                                                                                                     COMMENT
```

DEFINITION

ACCESSION

849

1221

789

```
Direct Submission

Direct Submission

Direct Submission

Submitted (02-JUN-1999) Genoscope - Centre National de Sequencage:

BP 191 91006 EVRY cedex - FRANCE (E-mail: segref@genoscope.cns.fr
- Web: www.genoscope.cns.fr)

Determination of this BAC-end sequence was carried out as part of a collaboration with the Berkeley Drosophila Genome Project (BDGP).

The BDGP is constructing a physical map of the Drosophila melanogaster genome using these BACs. For further information please see http://www.fruitfly.org The BDGP Drosophila melanogaster BAC library was prepared by Kazutoyo Osoegawa and Aaron Mammoser in Pieter de Jong's laboratory in the Department of Cancer Genetics at the Roswell Park Cancer Institute in Buffalo, NY. The library is named RPCT-98 and was constructed by partial EcoRI digestion of Drosophila DNA provided by the BDGP from the isogenic strain v2: on bw sp, the same strain used for the BDGP's pland by the Clones, the entire library of Drosophila DNA provided by the Library condition of the Library and how to order individual BAC clones, the entire library.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   925 bp DNA linear GSS 03-JUN-1999 Drosophila melanogaster genome survey sequence TET3 end of BAC # BACR19D16 of RPCI-98 library from Drosophila melanogaster (fruit fly), genomic survey sequence.
     986 GGTACGCGAGCGGCAGGGCGTGAGCTACTACG----ACGATTCCAAGGCCACCAACGTCG 1041
                                                                                                                                                                                                                                                                                                                                                                                             1222 ACGCGGTACCGCTGGTGCGCGTCGCAACGCTGGACGAAGCAGTCCGGCAGGCCGCCGAGC 1281
                                                                                                                                                                                                                                                                                                                                                                                                                          filters for hybridization from the BACPAC Resource Center can be found at http://bacpac.med.buffalo.edu/drosophila_bac.htm.
                                                                                                   1042 GCGCCGCCCTGGCGGCGATCGAGGGGCTGGGTGCCGACATCGACGGCAAGCTGGTGCTGC
                                                                                                                                  1162 TCTGCCGGGCGGTGGTACTGCTTGGCCGTGACGCCGGGCTGATTGCCCAGGCACTGGGCA
                                                                                                                                                                                                                                                                                                                                             1028 CGNGCGCGNNCGNNCGGCGCGCGCGCGCGCGCGCCCGNGGTTTGGNGNCNCTCGCGCG
                                                                                                                                                                                                1102 TCGCCGGCGGAGACGCCAAGGGCGCCGATTTCCATGACCTGCGCGAGCCGGTCGCGCGCT
                                                                                                                                                                                                                                                908 NCCGCGCGCNCGGCGCGCGCGGGNGNCCGCCCGGGCGCCCGCGCGCGCGCCCNGCGCGCGCG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Drosophila melanogaster (fruit fly)
Drosophila melanogaster
Eukaryota; Metazoa; Arthropoda; Hexapoda; Insecta; Pterygota;
Neoptera; Endopterygota; Diptera; Brachycera; Muscomorpha;
Ephydroidea; Drosophilidae; Drosophila.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Length 925;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   511 others
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      /mol_type="genomic DNA"
/db_txpe="genomic DNA"
/db_txef="taxon:7227"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Score 62.6; DB 29;
Pred. No. 0.013;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   172 t
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      /clone="BACR19D16"
/clone_lib="RPCI-98"
/note="end : TET3"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               1282 TGGCCCGCGAAGGCG 1296
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              AL053013.1 GI:4934461
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             728 GGCGNNCGGNCGCCG 714
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        4.38;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                61 c
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Query Match
Best Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Genoscope
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                BASE COUNT
ORIGIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              CNS0091P/c
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               DEFINITION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ORGANISM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        TITLE
JOURNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          RESULT 11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ACCESSION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           VERSION
KEYWORDS
SOURCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          REFERENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   AUTHORS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                FEATURES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         COMMENT
                                                                                                                                                                                                à
                                                                                                                                                                                                                                                g
                                                                                                                                                                                                                                                                                                                                             셤
                                                                                                                                                                                                                                                                                                                                                                                             ò
                                                                                                                                                                                                                                                                                                                                                                                                                                           엄
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             g
                                                g
                                                                                                   ò
                                                                                                                                               d
                                                                                                                                                                                                                                                                                                 à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       and Chemical Research (RIKEN), Genomic Sciences Center (GSC);
1-7-22 Suchiro-chou, Tsuruml-ku, Yokohama, Kanagawa 230-0045, Japan (E-mall:chimpbes@gsc.riken.go.jp, URL:http://hgp.gsc.riken.go.jp/, Tel:81-45-503-9111, Fax:81-45-503-9170)
Clones are derived from the chimpanzee BAC library PTB This BAC end was generated during the R&D process and may have higher chance of
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ;
;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   1381 CGNCNGCGNNGGNGCNGCGNNCGNGTGGNNGNNCGCGCGTTTGCGCGGNGGNCGCNNCGN 1322
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   1261 CCGTTTTCGCGNNCGCGGGCGNCGCGGGGNCGCGCGC-----GGCCGGCGGNCGC 1209
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      1148 CGCNGCCGGGCGCNGGCGCGCGCGCGCGCGCCGCGCCNGNCGCGNNCGGGCNGCCGCGN 1089
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   685
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  1208 GGAGCGCGCGCCCNNCGCGGCGCGCGCGNGGCNGGGGNCCGCGCGCNNGNGNCCGGCGNGCGC 1149
                            GSS 01-NOV-2001
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       865
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        925
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   746 GTCGTTCGGCCTGAACAAGCCGGACTTCAAGGCTTTCGGCCTGATCGAGGAAGACGGCCA 805
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       686 CGTGGTGAATCGCGCCGATGCCCTGACCCGACCGCTGATCGCCGATACCGTGCCGTGCTG 745
            คนบงบอบ/
Pan troglodytes DNA, clone: PTB-003A18.F, genomic survey sequence.
AG030607
                                                                                                                                                                                             Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
Mammalia; Eutheria; Primates; Catarrhini; Hominidae; Pan.
                                                                                                                                                                                                                                                                                                                                                                                        Fujjyama,A., Hattori,M., Toyoda,A., Taylor,T.D., Yada,T.,
Totoki,Y., Watenabe,H. and Sakaki,Y.
Direct Submission
Submitted (O2-AUG-2001) Asao Fujiyama, The Institute of Physical
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     CGACGCCATGCCTACCACCTGGCCAAGCACCGGATCTTCCGCGGGTGCCCGCCAGGT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       GAAGTGGCTGGCGTTCCAGTTCGACAAGCTGCTGCCGGTTGGCGAACTGAAGATCCGTGG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      866 CGCCCACAACTATTCCAACGCGCTCGCCGCGTGGCGCTGGGGCCATGCGGTCGGCCTGCC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     GTTCGACGCCATGCTCGGCGCGCTGAAGGCGTTTTCCGGCCTGGCTCATCGCTGCCAGTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Gaps
                                                                                                                                                                                                                                                                     Fujlyama, A., Hattori, M., Toyoda, A., Taylor, T.D., Yada, T., Totoki, Y., Watanabe, H. and Sakaki, Y. Bac end sequences of Library PTB Unpublished
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       11;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Length 1538;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     BAC Library"
186 others
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     0; Mismatches 390; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      DB 29;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    /cell_type="lymphoblast"
/clone_lib="PTB Chimpanzee Male
669 c 552 g 64 t
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Score 63.6; DB 2
Pred. No. 0.0089;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   /organism="Pan troglodytes"
/mol_type="genomic DNA"
/db_xref="taxon:9598"
/clone="PTB-003A18.F"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Location/Qualifiers
                                                                                                                                               Pan troglodytes (chimpanzee)
Pan troglodytes
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           : pKS145
: SacI
: SacI.
                                                                                                 AG030607.1 GI:16557480
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Sequencing: -21M13
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            clone tracking errors.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 4.48;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          /sex="male"
                                                                                                                                                                                                                                                                                                                                                                    (bases 1 to 1538)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Matches 274; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Vector
R.Site 1
R.Site 2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ď
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   PRIMERS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   LIBRARY
                                                                                                                           GSS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     979
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    908
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          926
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 source
                                              DEFINITION
ACCESSION
VERSION
KEYWORDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            BASE COUNT
ORIGIN
                                                                                                                                               SOURCE
ORGANISM
AG030607/c
                                                                                                                                                                                                                                                                                                                   TITLE
JOURNAL
REFERENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                         TITLE
JOURNAL
                                                                                                                                                                                                                                                REFERENCE
                                                                                                                                                                                                                                                                       AUTHORS
                                                                                                                                                                                                                                                                                                                                                                                           AUTHORS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              COMMENT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 셤
```

õ 셤 ò 셤 δ ద ò g ò ö

943

1243

326

```
680 bp mRNA linear EST 03-JUN-2003 CD444231 GI:31359874
                                                                                                                                                                                                              GGGGCTGGGTGCCGACATCGACGGCAAGCTGGTGCTGCTCGCCGGCGGAGGACGGCAAGGG 1123
                                                                                                                                                                                                                                                                                  1124 CGCCGATTTCCATGACCTGCGCGGCGGTCGCGCGCTTCTGCCGGCGGTGGTACTGCT 1183
                                                                                                                                                                                                                                                                                                                                                                                                                            1244 CGCAACGCTGGACGAAGCAGTCCGGCAGGCCGCCGAGCTGGCCCGCGAAGGCGATGCGGT 1303
                                                                      944 CGCGCTGAAGGCGTTTTCCGGCCTGGCTCATCGCTGCCAGTGGGTACGCGAGCGGCAGGG 1003
                                                                                                                                          1004 CGTGAGCTACTACGACGATTCCAAGGCCACCAACGTCGGCGCCCCTGGCGGCGGCGATCGA 1063
                                                                                                                                                                                                                                                                                                                                                                           447 CGAGACGGCGTCGTCGTGGGCGCCCCCATCGCCTGGTGTCGCTGCTGGCGCG 506
                                                                                                                                                                                                                                                                                                                   Eukaryota; Viridiplantae; Streptophyta; Embryophyta; Tracheophyta; Spermatophyta; Magnollophyta; Liliopsida; Poales; Poaceae; PACCAD clade; Panicoideae; Andropogoneae; Zea.
I (bases 1 to 680)
Lai, J., Dey, N., Kim, C.S., Becraft, P., Larkins, B., Linton, E. and Messing, J.
                                                                                                                                                                                                                                                                                                                                                                                                                                                              507 GCGGGCCTTCGGCGCGCGCGCGTGGTGGTCGTGGATGTGGACCACCACCACCGCTGGCCGT 566
 884 CGCGCTCGCCGCCGCTGGCGCTGGGCCATGCGGTCGGCCTTGCCGTTCGACGCCATGCTCGG
                                   147 CGCGGCCGTGGTCGAGGAGGTGGGCGCCGGCGTGACGCACCTGTCCGTGGGCGACCGCGT
                                                                                          /tissue_type="Endosperm of 7-23DAP"
/clone_lib="Endosperm_4"
/note="Vector: pBluescript SK-; Site_1: EcoRI; Site_2:
                                                                                                                                                                                                                                                 327 GGTGGTGCACCCGGCCGACCTGTGCTTCAAGCTCCCCGACGGGGTGAGCCTGGAGGAGGG
                                                                                                                                                                                                                                                                                                                                                        1184 TGGCCGTGACGCCGGGCTGATTGCCCAGGCACTGGGCAACGCGGTACCGCTGGTGCGCGT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Score 61.6; DB 14; Length 680; Pred. No. 0.019;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  1 others
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            08854, USA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Contact: Lai, Jinsheng
Contact: Lai, Jinsheng
Dr. Joachim Messing's lab
Waksman Institute, Rutgers University
190 Frelinghuysen Rd., Piscataway, NJ 08
Tel: 732-445-3801
Fax: 732-445-5735
Email: jlai@waksman.rutgers.edu
Seq primer: T3.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Sequencing of the maize endosperm ESTs
Unpublished
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ų
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              66
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          /db_xref="taxon:4577"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  /organism="Zea mays"
/mol_type="mRNA"
/cultivar="W22"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  б
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                288
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               1304 GCTGTTGTCGCCGGCC 1319
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    4.2%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       GGCCAGGTCGCTGGGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                207 c
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     . . 680
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Query Match
Best Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Zea mays
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  82
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             EST
                                                                                                                                                                                                              1064
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  267
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    DEFINITION
ACCESSION
VERSION
KEYWORDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              BASE COUNT
ORIGIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ORGANISM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    JOURNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    RESULT 13
CD444231
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  REFERENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   AUTHORS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 FEATURES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      TITLE
                                 g
                                                                                                                                                                         g
                                                                      ð
                                                                                                     d
                                                                                                                                        ò
                                                                                                                                                                                                              à
                                                                                                                                                                                                                                           g
                                                                                                                                                                                                                                                                                  ò
                                                                                                                                                                                                                                                                                                                  g
                                                                                                                                                                                                                                                                                                                                                      ð
                                                                                                                                                                                                                                                                                                                                                                                    셤
                                                                                                                                                                                                                                                                                                                                                                                                                           ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                              g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ŏ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                g
 ö
                               961 CCGGCCTGGCTCATCGCTGCCAGTGGGTACGCGAGCGGCAGGGCGTGAGCTACGACG 1020
                                                                                                     1081 TCGACGCCAAGCTGGTGCTCGCCGGCGGAGACGGCAAGGGCGCCGGATTTCCATGACC 1140
                                                                                                                                                                                                                                                                                                                                                                                    1261 CAGTCCGGCAGGCCGCCGAGCTGGCCCGCGAAGGCGATGCGGTGCTGTTGTCGCCGGCCT 1320
                                                                                                                                                                                                                                             1141 TGCGCGAGCCGGTCGCGCGTTCTGCCGGGCGGTGGTACTGCTTGGCCGTGACGCCGGGC 1200
                                                                                                                                                                                                                                                                                                                .201 TGATTGCCCAGGCACTGGCAACGCGGTACCGCTGGTGCGCGTCGCAACGCTGGACGAAG 1260
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    EST 03-JUN-2003
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ö
                                                                                                                         860 SACVKCNASSSCGCGGCGMABCCMCSSSSSCCGSASARGVKVRASGGAGKRGGGSGGASA 801
                                                                                                                                                                                             620 GGSGSVSASSGMSSSVSSSGGRSGGGGGGGGGGGGSGSSSSGSGSGSGSVCSCSSGCMC 561
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Eukaryota; Viridiplantae; Streptophyta; Embryophyta; Tracheophyta; Spermatophyta; Magnoliophyta; Liliopsida; Poales; Poaceae; PACCAD clade; Panicoideae; Andropogoneae; Zea.
1 (bases 1 to 583)
Lai,J., Dey,N., Kim,C.S., Becraft,P., Larkins,B., Linton,E. and Messing,J.
                                                                                                                                                                                                                                                                     920 SCSCSCSSBSCSSSSSMSTSSSNSSBCSSCSSSBSSSSTSSMSSSSBSSSSGTS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    /tissue_type="Endosperm of 7-23DAP"
/clone_lib="Endosperm_4"
/note="Vector: pBluescript SR-; Site_1: EcoRI; Site_2:
                                                                                                                                                                                                                                                                                                                                        Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Gaps
 ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            583 bp mRNA linear EST CL01N0427H12.b Endosperm_4 Zea mays cDNA, mRNA sequence. CD443S49 GD443S49.1 GI:31359192
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             4.2%; Score 61.6; DB 14; Length 583;
46.3%; Pred. No. 0.019;
Live 0; Mismatches 234; Indels 0
Conservative 173; Mismatches 143; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Contect: Lai, Jinsheng
Dr. Joachim Messing's lab
Waksman Institute, Rutgers University
190 Freilinghuysen Rd., Piscataway, NJ 08854, USA
Tel: 732-445-3801
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Sequencing of the maize endosperm ESTs
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           90 t
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Email: jlai@waksman.rutgers.edu
Seq primer: T3.
Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   /db_xref-"taxon:4577"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            /organism="zea mays"
/mol_type="mRNA"
/cultivar="W22"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          243 g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           181 c
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Tel: 732-445-3801
Fax: 732-445-5735
Email: jlai@waksme
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           xhoi
                                                                                                                                                                                                                                                                                                                                                                                                                                                        1321 GCGCG 1325
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Best Local Similarity
Matches 202; Conserv
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             RCSCS 556
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Unpublished
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ø
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Zea mays
Zea mays
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          69
49;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           260
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             RESULT 12
CD443549
LOCUS
DEFINITION
ACCESSION
VERSION
KEYWORDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        BASE COUNT
ORIGIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ORGANISM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                JOURNAL
COMMENT
Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            AUTHORS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           REFERENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            FEATURES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             TITLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     SOURCE
                                                                  ద
                                                                                                   ö
                                                                                                                                    셤
                                                                                                                                                                       ò
                                                                                                                                                                                                       원
                                                                                                                                                                                                                                           ò
                                                                                                                                                                                                                                                                             셤
                                                                                                                                                                                                                                                                                                                  à
                                                                                                                                                                                                                                                                                                                                             g
                                                                                                                                                                                                                                                                                                                                                                                    ò
                                                                                                                                                                                                                                                                                                                                                                                                                       셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                        ö
```

σ

```
Length 809;
         Score 61.6; DB 14;
Pred. No. 0.02;
                                    234;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Sequencing of the maize endosperm ESTs
4.2%; Scc. 46.3%; Pred. No. v.. 2 . 0; Mismatches 2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       114
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Email: jlai@waksman.rutgers.edu
Seq primer: T3.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    /db_xref="taxon:4577"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            mays
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       326 g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        /mol_type="mRNA"
/cultivar="W22"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           /organism="Zea
                                                                                                                                                                                                                                                                                                                                                                                                                                                    1304 GCTGTTGTCGCCGGCC 1319
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          CD433407
CD433407.1 GI:31349050
                                                                                                                                                                                                                                                                                                                                                                                                                                                                              574 GGCCAGGTCGCTGGGC 589
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     253 c
                        Best Local Similarity 46.39
Matches 202; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          "Iodx
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       96 a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Zea mays
Zea mays
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       EST
                                                                                                                                                                                                                               1064
                                                                                                                   944
                                                                                                                                                                         1004
                                                                                                                                                                                                                                                                                                                                          1184
         Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              LOCUS
DEFINITION
ACCESSION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      VERSION
KEYWORDS
SOURCE
ORGANISM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       BASE COUNT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      RESULT 15
CD433407
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          TITLE
JOURNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    REFERENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                AUTHORS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   FEATURES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     COMMENT
                                                                ò
                                                                                        qq
                                                                                                                   ò
                                                                                                                                            셤
                                                                                                                                                                                                  g
                                                                                                                                                                                                                               à
                                                                                                                                                                                                                                                        a
                                                                                                                                                                                                                                                                                                            셤
                                                                                                                                                                                                                                                                                                                                          à
                                                                                                                                                                                                                                                                                                                                                                   g
                                                                                                                                                                                                                                                                                                                                                                                                                        g
                                                                                                                                                                                                                                                                                                                                                                                                                                                   á
                                                                                                                                                                                                                                                                                                                                                                                                                                                                              셤
                                                                                                                                                                         à
                                                                                                                                                                                                                                                                                     δ
                                                                                                                                                                                                                                                                                                                                                                                              δ
                                                                                                                                                                                                    1123
                                                                                                                                              1063
                                                                                                                                                                                                                                                        1183
                                                                                                                                                                                                                                                                                                             1184 TGGCCGTGACGCCGGGCTGATTGCCCAGGCACTGGGCAACGCGGTACCGCTGGTGCGCGT 1243
                                                                                         1003
                                                                                                                                                                                                                                                                                                                                                                     .244 CGCAACGCTGGACGAAGCAGTCCGGCAGGCCGCCGAGCTGGCCCGCGAAGGCGATGCGGT 1303
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      EST 03-JUN-2003
           ö
                                                                                                                                                                                                                               358
                                                                                                                                                                                                                                                                                   418
                                    943
                                                                                                                                                             Eukaryota, Viridiplantae; Streptophyta; Embryophyta; Tracheophyta; Spermatophyta; Magnollophyta; Liliopsida; Poales; Poaceae; PACCAD calde; Panicoideae; Andropogoneae; Zea.
1 (bases 1 to 809)
Lai,J., Dey,N., Kim,C.S., Becraft,P., Larkins,B., Linton,E. and
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     /db_xref="taxon:4577"
/tissue_type="Fandosperm of 7-23DAP"
/clone_llb="Endosperm_3"
/note="Vector: pBluescript SK-; Site_1: BooRI; Site_2:
                                                   944 CGCGCTGAAGGCGTTTTCCGGCCTGGCTCATCGCTGCCAGTGGGTACGCGAGGGGCAGGG
                                                                                                          179 GGGGTGGAGCGGGGGGTCAGCTGCTGGCGCCGCCACTGCAAGGGCGGGGGGGTACAA
                                                                                                                                              CGTGAGCTACTACGACGATTCCAAGGCCACCAACGTCGGCGCCCCTGGCGGCGATCGA
                                                                                                                                                                                                 1064 GGGGCTGGGTGCCGACATCGACGGCAAGCTGGTGCTCGCCGGCGGGGACGGCAAGGG
                                                                                                                                                                                                                                                       1124 CGCCGATTTCCATGACCTGCGCGAGCCGGTCGCGCGCTTCTGCCGGGCGGTGGTACTGCT
                                                                                                                                                                                                                                                                          419 CGAGACGGCGTGCTCGTGGTGGGCGCCCCCATCGGCTGGTGTCGCTGCTGGCGGC
                                                                                                                                                                                                                                                                                                                                                                                    884 GCGCCTCGCCGCCGCTGGCGCTGGGCCATGCGGTCGGCCTGCCGTTCGACGCCATGCTCGG
                                                                                                                                                                                                                            GGTGGTGCACCCGGCCGACCTGTGCTTCAAGCTCCCCGACGGGGTGAGCCTGGAGGAGGG
           Gaps
           .;
0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      CD434773 809 bp mRNA linear EST EL01N0328A08.b Endosperm_3 Zea mays cDNA, mRNA sequence
         0; Mismatches 234; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Dr. Joachim Messing's lab
Waksman Institute, Rutgers University
190 Frelinghuysen Rd., Piscataway, NJ 08854, USA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Sequencing of the maize endosperm ESTs Unpublished
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   dq 608
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Fax: 732-445-5735
Email: jlai@waksman.rutgers.edu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           /organism="Zea mays"
/mol_type="mRNA"
/cultivar="W22"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Seq primer: T3.
Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Б
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            338
                                                                                                                                                                                                                                                                                                                                                                                                                        1304 GCTGTTGTCGCCGGCC 1319
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            CD434773.1 GI:31350416
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Contact: Lai, Jinsheng
                                                                                                                                                                                                                                                                                                                                                                                                                                                 GGCCAGGTCGCTGGGC 554
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         249 c
        202; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          102 a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Messing, J
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Zea mays
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    CD434773
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Zea mays
                                                                                                                                            1004
                                                                                                                                                                                                                            299
                                                                                                                                                                                                                                                                                                                                                                                             479
                                                                                                                                                                                                                                                                                                                                                                                                                                                   539
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              DEFINITION
ACCESSION
VERSION
KEYWORDS
SOURCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         BASE COUNT
ORIGIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ORGANISM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            TITLE
JOURNAL
COMMENT
         Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           RESULT 14
CD434773
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       REFERENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    AUTHORS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   FEATURES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      LOCUS
                                                                                                                ద
                                                                                                                                                                                                                         g
                                                                                                                                                                                                                                                       ŏ
                                                                                                                                                                                                                                                                               g
                                                                                                                                                                                                                                                                                                            ò
                                                                                                                                                                                                                                                                                                                                       d
                                                                                                                                                                                                                                                                                                                                                                  ŏ
                                                                                                                                                                                                                                                                                                                                                                                         g
                                                                                                                                                                                                                                                                                                                                                                                                                        ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                g
                                    õ
                                                             g
                                                                                        ò
                                                                                                                                            ö
                                                                                                                                                                     g
                                                                                                                                                                                              Q
```

```
1243
ö
                                                                                                                                                                     CGCGCTGAAGGCGTTTTCCGGCCTGGCTCATCGCTGCCAGTGGGTACGCGAGCGGCAGGG 1003
                                                                                                                                                                                                                                                                                       CGTGAGCTACTACGACGATTCCAAGGCCACCAACGTCGGCGCCCCTGGCGGCGATCGA 1063
                                                                                                                                                                                                                                                                                                                                                                                                         GGGGCTGGGTGCCGACATCGACGCAGCTGGTGCTGCTCGCCGGCGGAGACGGCAAGGG 1123
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        1124 CGCCGATTTCCATGACCTGCGCGAGCCGGTCGCGCGCTTCTGCCGGGCGGTGGTACTGCT 1183
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         1244 CGCAACGCTGGACGAAGCAGTCCGGCAGGCCGCGGAGCTGGCCCGCGAAGGCGATGCGGT 1303
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              EST 03-JUN-2003
                                                         943
                                                                                                            213
                                                                                                                                                                                                                                                                                                                                                333
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Eukaryota; Viridiplantae; Streptophyta; Embryophyta; Tracheophyta; Spermatophyta; Magnoliophyta; Liliopsida; Poales; Poaceae; PACCAD clade; Panicoideae; Andropogoneae; Zea. [ toases 1 to 789)
Lai,J., Dey,N., Kim,C.S., Becraft,P., Larkins,B., Linton,E. and Messing,J.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  /tisue_type="Endosperm of 7-23DAP"
/clone_lib="Endosperm_3"
/note="Vector: pBluescript SK-; Site_1: EcoRI; Site_2:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          TGGCCGTGACGCCGGGCTGATTGCCCCAGGCACTGGGCAACGCGGTACCGCTGGTGCGCGT
                                                         884 CGCGCTCGCCGCGCTGGCGCTGGGCCATGCGGTCGGCCTGCCGTTCGACGCCATGCTCGG
                                                                                          274 ccrereceaegacargaagrictresceaeceeegegegegegegegegeaega
                                                                                                                                                                                                                                                                                                                                                                                                                                                               334 GGTGGTGCACCCGGCCGACCTGTGCTTCAAGCTCCCCGACGGGGTGAGCCTGGAGGAGGG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   454 CGAGACGGGCGTGCTCGTGGTGGCGCCCGGCCCCATCGGCCTGGTGTCGCTGCTGGCGGC
   Gaps
ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              CD433407 1inear EST EL01N0308B07.b Endosperm_3 Zea mays cDNA, mRNA sequence.
   Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Unpublished
Contact: Lai, Jinsheng
Dr. Joachim Messing's lab
Waksman Institute, Rutgers University
190 Frelinghuysen Rd., Piscataway, NJ 08854, USA
Tel: 732-445-5735
```

```
ORIGIN
```

959 ITCCGGCCTGGCTCATCGCTGCCAGTGGGTACGCGAGGGCGAGGGCGTGAGCTACGA 1018 1019 CGATTCCAAGGCCAACGTCGGCGCCCTGGCGGCGATCAAGGGGCTGGGFGCCGA 1078 1079 CATCGACGGCAAGCTGGTGCTCGCCGGCGGAGACGCCAAGGCGCCGATTTCCATGA 1138 1139 CCTGCGCGAGCCGGTCGCGCGTTCTGCCGGGCGGTGGTACTGCTTGGCCGTGACGCCGG 1198 1199 GCTGATTGCCCAGGCACTGGGCAACGCGGTACCGCTGGTGCCGCGTCGCACGCTGGACGA 1258 1259 AGCAGTCCGGCAGGCCGCGAGCTGGCCCGCGAAGGCGATGCGGTGCTGTTGTCGCCGGC 1318 ö 203 cGACCTGTGCTTCAAGCTCCCGACGGGTGAGCCTGGAGGAGGCGCCATGTGCGAGCC 262 899 GGCGCTGGGCCATGCGGTCGGCCTGCGTTCGACGCCATGCTCGGCGCGCTGAAGGCGTT 958 263 GCTGAGGGTGGGCGTGCACGCGTGCCGCGGGGGTGGGGGCCGAGACGGGCGTGCT 322 323 CGTGGTGGGCGCCCGATCGGCCTGGTGTCGCTGCTGGCGGGGCCTTCGGCGC 382 383 GCGCGCCTGGTGGTCGTGGATGTGGACGACCACCGCCTGGCCGTGGCCAGGTCGCTGGC 442 Gaps ö Query Match 4.2%; Score 61; DB 14; Length 789; Best Local Similarity 46.6%; Pred. No. 0.026; Matches 196; Conservative 0; Mismatches 225; Indels 1319 C 1319 443 C 443 g õ g à g δ a õ g ò g ò g ò

Search completed: August 14, 2003, 04:12:24 Job time : 2903 secs

us-09-701-229-1.rng

```
Salmonella typhi D
Escherichia coli p
E. coli DNA for ce
Neisseria meningit
N. meningitidis pa
Neisseria meningit
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Pseudomonas aerugi
Pseudomonas aerugi
                                                                                                                                                  August 14, 2003, 00:43:39; Search time 422 Seconds (without alignments) 9275.320 Million cell updates/sec
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.
                                                                                                                                                                                                                                                                                                             /SIDS1/gcgdata/geneseq/geneseqn-embl/NA2001B.DAT:*/SIDS1/gcgdata/geneseq/geneseqn-embl/NA2002.DAT:*/SIDS1/gcgdata/geneseq/geneseqn-embl/NA2003.DAT:*
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               /SIDS1/gcgdata/geneseq/geneseqn-embl/NA2001A.DAT:*
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Description
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    /gcgdata/geneseq/geneseqn-embl/NA1995.DAT:*/gcgdata/geneseq/geneseqn-embl/NA1996.DAT:*
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       /gcgdata/geneseq/geneseqn-embl/NA2000.DAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      /SIDSI/gcgdata/geneseq/geneseqn-embl/NA1982.DMT./SIDSI/gcgdata/geneseq/geneseqn-embl/NA1983.DMT./SIDSI/gcgdata/geneseq/geneseqn-embl/NA1983.DMT./SIDSI/gcgdata/geneseq/geneseqn-embl/NA1984.DMT./SIDSI/gcgdata/geneseq/geneseqn-embl/NA1985.DMT./SIDSI/gcgdata/geneseq/geneseqn-embl/NA1985.DMT./SIDSI/gcgdata/geneseq/geneseqn-embl/NA1986.DMT./SIDSI/gcgdata/geneseq/geneseqn-embl/NA1986.DMT./SIDSI/gcgdata/geneseq/geneseqn-embl/NA1988.DMT./SIDSI/gcgdata/geneseq/geneseqn-embl/NA1988.DMT./SIDSI/gcgdata/geneseq/geneseqn-embl/NA1988.DMT.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   /gcgdata/geneseg/genesegn-emb1/NA1998.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         /SIDS1/gcgdata/geneseq/geneseqn-emb1/NA1989
/SIDS1/gcgdata/geneseq/geneseqn-emb1/NA1990
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         /SIDS1/gcgdata/geneseg/genesegn-emb1/NA1994
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                /SIDS1/gcgdata/geneseq/geneseqn-embl/NA1991
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              /gcgdata/geneseg/genesegn-embl/NA1992
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   /SIDS1/gcgdata/geneseq/geneseqn-emb1/NA1993
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           /gcgdata/geneseg/genesegn-embl/NA1997
GenCore version 5.1.6
Copyright (c) 1993 - 2003 Compugen Ltd.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           /SIDS1/gcgdata/geneseq/genesegn-
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Total number of hits satisfying chosen parameters:
                                                                                                                                                                                                                                                                                                                                                                                                                                          2552756 seqs, 1349719017 residues
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 SUMMARIES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Post-processing: Minimum Match 0%
Maximum Match 100%
Listing first 45 summaries
                                                                                                       OM nucleic - nucleic search, using sw model
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                AA253175
AAA81479
AAF21607
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             AAH81460
AAS52295
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                AAZ47131
AAS54275
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       AAS56341
                                                                                                                                                                                                                                                                                                                                                              IDENTITY_NUC
Gapop 10.0 , Gapext 1.0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  N_Geneseq_19Jun03:*
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Minimum DB seq length: 0
Maximum DB seq length: 200000000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  BB
                                                                                                                                                                                                                                                       US-09-701-229-1
1450
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             19.2 1317
19.2 1317
12.4 1380
12.4 69936
12.4 349980
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Query
Match Length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     /SIDS1,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Score
                                                                                                                                                                                                                                                                                                                                                                 Scoring table:
                                                                                                                                                                                                                                                                                     Perfect score:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Database :
                                                                                                                                                                                                                                                                                                                   Sednence:
                                                                                                                                                                                                                                                                                                                                                                                                                                          Searched:
                                                                                                                                                        Run on:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Result
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      OO
```

	6	180	12.4	1437668	21	AAA81490	N. meningitidis B
	10	173.8	12.0	1461	22	AAH52025	Mycobacterium tube
C	1	173.8	12.0	4411529	22	AAT99682	Mycobacterium tube
י ט	12	172.2	11.9	4403765	22	AA199683	Mycobacterium tube
	13	165.6	11.4	1335	25	ABZ41528	
	14	158	10.9	4942	23	AAS89816	NA encoding no
	15	158	10.9	4944	23	AAS89273	encoding
	16	158	10.9	4944	23	AAS90181	encoding
	17	157.2	10.8	1080	23	AAS89258	encoding nove
	18	157.2	10.8	1080	23	AAS89801	
	19	157.2	10.8	1080	23	AAS90166	encoding
	20	152	10.5	2058	23	AAS73012	encoding
	21	152	10.5	4831	23	AAS94542 .	encoding
	22	151.4	10.4	3117	23	AAS69095	
	23	151.4	10.4	3117	23	AAS89240	
	24	149.8	10.3	1314	23	AAS53453	Haemophilus influe
	25	149.8	10.3	1830121	17	AAT42063	Haemophilus influe
Ö	56	119	8.2	96109	22	AAF28548	Genomic fragment #
	27	110	7.6	2703	23	AAS64579	DNA encoding novel
	28	110	7.6	2703	23	AAS66661	DNA encoding novel
	53	91.8	6.3	1352	24	ABK74394	Bacillus lichenifo
O	30	98	5.9	349980	22	AAH68531	C glutamicum codin
O	31	79.8	5.5	356	21	AAZ53173	Neisseria meningit
υ	32	78.4	5.4	356	21	AAZ53174	Neisseria meningit
	33	97	5.2	9515	15	AAQ55145	Pseudomonas aerugi
	34	92	5.2	9515	25	ABZ77356	Nucleotide sequenc
	35	16	5.2	9515	25	AAL51844	Pseudomonas aerugi
O	36	74.6	5.1	37856	21	AAA11992	S. cellulosum DNA
O	37	73.6	5.1	356	21	AAZ53172	Neisseria gonorrhe
	38	73.6	5.1	44377	18	AAT78508	Platenolide syntha
	39	73.6	5.1	44377	18	AAT80414	Platenolide syntha
Ö	40	73.2	5.0	450	21	AAZ5317	Neisseria meningit
	41	68.8	4.7	8169	19	AAV26609	Actinomadura hibis
	42	67.4	4.6	1119	24	ABQ9003	M. capsulatus gene
O	43	67	4.6	640681	24	ABA92787.	
O	44	66.8	4.6	450	21	AAZ5316	ă
	45	8.99	4.6	53789	19	AAV2118	Amycolatopsis medi
						SENGMUCTIA	
						CINCHIDA	
RES	RESULT 1						

```
MurD; bacterial cell wall; blosynthesis; inhibitor; D-glutamate; UDP-N-acetylmuramyl-L-alanine precursor; ds.
                                                          Pseudomonas aeruginosa murD gene.
       AAZ47131 standard; DNA; 1450 BP.
                                                                                                                                                                                                     ä
                                                                                                                                                  99WO-US11585
                                                                                                                                                                   98US-0087308
                                         (first entry)
                                                                                                                                                                                                    El-Sherbeini M, Azzolina
                                                                                                                                                                                    (MERI ) MERCK & CO INC
                                                                                                  Pseudomonas aeruginosa
                                                                                                                                                                                                                    WPI; 2000-072548/06.
P-PSDB; AAY56047.
                                                                                                                 WO9961050-A1
                                                                                                                                                  26-MAY-1999;
                                                                                                                                                                   29-MAY-1998;
                                         28-MAR-2000
                                                                                                                                   02-DEC-1999.
                          AAZ47131;
AAZ47131
ID AAZ4
```

New nucleic acid encoding the MurD protein of Pseudomonas aeruginosa,

ð g ò g õ g ð g å g à 셤 ò g ò g ò a ð g ò a ð g

1080

1020

960

1200

1200

1260

```
TGATCGCCGATACCGTGCCGTGGTCGTTCGGCCTGAACAAGCCGGACTTCAAGGCTT 780
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                TCGGCCTGATCGAGGAGACGCCCAGAAGTGGCTGGCGTTCCAGTTCGACAAGCTGCTGC
                                                                                                                                                                                                                                               TCGACGGCAAGCTGGTGCTCGCCGGCGGAGACGGCAAGGGCGCCGATTTCCATGACC
                                                                                                                                                                                                                                                                                                                   TGATTGCCCAGGCACTGGGCAACGCGGTAGTGCGTGCGCGTCGCAACGCTGGACGAAG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                              TAGAGGAGCTAGCGTGATGCTGTCGGTGTTGCGCCCCTTCCCGTCGCCGCTGTTGAGCCG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      1381 TAGAGGAGCTAGCGTGATGCTGTGTGTGCCCCCTTCCCGTCGCCGCTTGAGGCG
                                                      TCGGCCTGATCGAGGAAGACGCCCAGAAGTGGCTGGCGTTCCAGTTCGACAAGCTGCTGC
                                                                                                                                                                                           CCGGCCTGGCTCATCGCTGCCAGTGGGTACGCGAGCGCAGGGCGTGAGCTACGACG
                                                                                                                                                                                                                                                                                                                                                         TGCGCGAGCCGGTCGCGCGCGTTCTGCCGGGCGGTGGTACTGCTTGGCCGTGACGCCGGGC
                                                                                                                                                                                                                                                                                                                                                                     TGATTGCCCAGGCACTGGGCAACGCGGTACCGCTGGTGCGCGTCGCAACGCTGGACGAAG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    GCGCGAGCCTGGACATGTTCAAGAACTTCGAAGAACGCGGACGCCTGTTCGCCAAAGCCG
                                                                                                                                       CGCTGGGCCATGCGGTCGGCCTGCCGTTCGACGCCCATGCTCGGCGCGCTGAAGGCGGTTTT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                 CAGTCCGGCAGGCCGCCGAGCTGGCCCGCGAAGGCGATGCGGGTGCTGTTGTCGCCGGCCT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      cellular proliferation protein #406
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                cellular proliferation gene; drug design.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         BP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Pseudomonas aeruginosa DNA for
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          DNA; 1347
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      21-MAR-2001; 2001WO-US09180.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  21-MAR-2000; 2000US-191078P.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Antisense; ds; prokaryotic antibiotic; antibacterial;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          GCACGGCATC 1450
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Pseudomonas aeruginosa
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         AAS54275 standard;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   W0200170955-A2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             13-FEB-2002
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              27-SEP-2001
                                                                                                                                                                                                                                                1021
                                                                                                                                                                                                                                                                          1021
                                                                                                                                                                                                                                                                                                   1081
                                                                                                                                                                                                                                                                                                                              1081
                                                                                                                                                                                                                                                                                                                                                         1141
                                                                                                                                                                                                                                                                                                                                                                                  1141
                                                                                                                                                                                                                                                                                                                                                                                                           1201
                                                                                                                                                                                                                                                                                                                                                                                                                                      1201
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         1261
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    1321
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             1321
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        1381
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             1441
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1441
  721
                                                                                                            841
                                                                                                                                                               901
                                                                                                                                                                                                                    961
                                                                                                                                                                                                                                                                                                                                                                                                                                                                1261
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  AAS54275;
                            781
                                                      781
                                                                                 841
                                                                                                                                       901
                                                                                                                                                                                         961
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        RESULT
                                                 g
                                                                                                     q
                                                                                                                                       ð
                                                                                                                                                               g
                                                                                                                                                                                                               g
                                                                                                                                                                                                                                                                                                                        g
                                                                                                                                                                                                                                                                                                                                                                           셤
                                                                                                                                                                                                                                                                                                                                                                                                                                   qq
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      g
                            å
                                                                                 ò
                                                                                                                                                                                         ò
                                                                                                                                                                                                                                               οχ
                                                                                                                                                                                                                                                                   8
                                                                                                                                                                                                                                                                                             δ
                                                                                                                                                                                                                                                                                                                                                       à
                                                                                                                                                                                                                                                                                                                                                                                                           ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                 à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     g
                                                                                                                                                                                                                                                                                      ö
                                                                                                                                                                                                                                                                                                                                                                                                                        180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                300
                                                                                                                                                                                                                                                                                                                                                                                                                                                                              240
                                                             MITD is an enzyme involved in blosynthesis of bacterial cell walls, so inhibiting it inhibits bacterial growth (by preventing the inhibiting of inhibiting it inhibits bacterial growth (by preventing WIND-catalyzed addition of D-glutamate to an alanyl residue in the UDP-N-acetylmuramyl-L-alanine precursor). Cells that express murb protein can be used: (a) to identify inhibitors of Murb, and (b) for recombinant production of Murb, which is used to raise specific antibodies (potential therapeutic inhibitors). Fragments of the murb gene can be used as probes and primers to detect Murb-encoding sequences (to identify polymorphic murb genes or to detect P acetylnospi, also as antisense modulators. The murb inhibitors are useful for treating or preventing bacterial infections, including those caused by P. aeruginosa.
                                                                                                                                                                                                                                                                                                                                                                    120
                                                                                                                                                                                                                                                                                                                                                                                                                                   300
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    360
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         420
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 420
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             480
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       480
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  540
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            540
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     900
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                009
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          999
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     099
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                720
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         720
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    780
                                                                                                                                                                                                                                                                                                                 9
                                                                                                                                                                                                                                                                                                                                         9
                                                                                                                                                                                                                                                                                                              AGCTGGCCACCTGCGTGCCCAGTATCCGCAGGTGGAAGTGCGTTGCGGCGAACTCGACG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          CCGAGTTCCTCTGCTCCGCCCGCGAACTCTATGTCAGCCCCGGCTTGTCGCTGCGCACCC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            CTGCGCTGGTACAGGCCGCCGCGAAAGGCGTGCGCATCTCCGGTGACATCTTCG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     TGATCGCCGATACCGTGCCGTGCTGGTCGTTCGCCCTGAACAAGCCGGACTTCAAGGCTT
                                                                                                                                                                                                                                                                                                                                                                   TCGCCTCCGACCACTTCCGCATCGTTGTCGGCCTCGGCAAGAGCGGCATGTCCCTGGTGC
                                                                                                                                                                                                                                                                                                                                                                                                                       GCTACCTGGCGCGCGCGCTTGCCTTTCGCCGTGGTCGATACCCGAGAGAACCCGCCGG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       CCCGCGAGGCGCAAGGCCCCCGATCGTCGCCATCACCGGTTCCCAACGCGAAGAGCACCGTGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 TCGGCACCCCGGCGCTCGACCTGCTGCCGACGACATCGAGCTGTACGTGTTGGAGCTGT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     CGAGCTTCCAGCTGGAAACCTGCGATCGCCTCAACGCCGAGGTGGCGACGTGCTGAACG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          TCAGCGAAGACCATATGGATCGCTACGACGGCATGGCTGACTACCACCTGGCCAAGCACC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               GGATCTTCCGCGGTGCCCGCCAGGTCGTGAATCGCGCCGATGCCCTGACCCGACCGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           CCACCCTGGTGGCGAAATGGCGGTGGCCGCGGACAAGCGTGTCGCCGTCGCCGCCAACC
                                                                                                                                                                                                                                                                                      Gaps
                                                        aeruginosa
                                                                                                                                                                                                                                                         Ouery Match 100.0%; Score 1450; DB 21; Length 1450; Best Local Similarity 100.0%; Pred. No. 3.7e-252; Matches 1450; Conservative 0; Mismatches 0; Indels 0;
                                                      from Pseudomonas
                                                                                                                                                                                                                                Sequence 1450 BP; 227 A; 487 C; 487 G; 249 T; 0 other;
                                                        gene
identify specific inhibitors
                                                      sequence represents the MurD
                          35pp;
                         Page 8-9;
                                                                                                                                                                                                                                                                                                                                                                                                                     121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                           181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           301
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      361
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              541
                                                                                                                                                                                                                                                                                                                                                                   61
                                                                                                                                                                                                                                                                                                                                                                                            61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  301
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 361
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           421
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               481
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          481
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     541
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         601
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  601
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             661
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       661
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 721
 ဌ
                                                    This
MurD
nseq
```

 $\boldsymbol{\omega}$ 

```
1010
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     1070
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        1020
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1130
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 1080
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         1190
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    1250
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1200
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            1310
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1370
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  960
                                                     480
                                                                                                                                                                     650
                                                                                                                                                                                                      9
                                                                                                                                                                                                                                            710
                                                                                                                                                                                                                                                                               9
                                                                                                                                                                                                                                                                                                                   770
                                                                                                                                                                                                                                                                                                                                                        720
                                                                                                                                                                                                                                                                                                                                                                                              830
                                                                                                                                                                                                                                                                                                                                                                                                                                   780
                                                                                                                                                                                                                                                                                                                                                                                                                                                                        890
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            840
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 950
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       900
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  GTGCTGAACGTCAGCGAAGACCATATGGATCGCTACGACGGCGTGGCTGACTACCACCTG
                                                                                                                                                                                                                                                                GACGCCGGGCTGATTGCCCAGGCACTGGGCAACGCGGTACCGCTGGTGCGCGCTCGTACG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         TCGCCGGCCTGCGCGAGCCTGGACATGTTCAAGAACTTCGAAGAACGCGGACGCCTGTTC
                     GGCGGCAACCTCGGCACCCCGGCGCTCGACCTGCTGGCCGACGACATCGAGCTGTACGTG
                                         GGCGGCAACCTCGGCACCCCGGCGCTCTGCTGCTGGCCGACGACATCGAGCTGTG
                                                                                            TTGGAGCTGTCGAGCTTCCAGCTGGAAACCTGCGATCGCCTCAACGCCGAGGTGGCGACC
                                                                                                                  GTGCTGAACGTCAGCGAAGACCATATGGATCGCTACGACGGCATGGCTGACTACCACCTG
                                                                                                                                                                                                                                              GCCAAGCACCGGATCTTCCGCGGTGCCCGCCAGGTCGTGGTGAATCGCGCCGATGCCCTG
                                                                                                                                                                                                                                                                                                                       ACCCGACCGCTGATCGCCGATACCGTGCCGTGCTGCTTCGGCCTGAACAAGCCGGAC
                                                                                                                                                                                                                                                                                                                                                                                                AAGCTGCTGCCGGTTGGCGAACTGAAGATCCGTGGCGCCCACAACTATTCCAACGCGCTC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   GCCGCGCTGGCGCTGGGCCATGCGGTCGGCCTGCCGTTCGACGCCATGCTCGGCGCGCTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            AAGGCGTTTTCCGGCCTGGCTCATCGCTGCCAGTGGGTACGCGAGCGGCAGGGCGTGAGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                TACTACGACGATTCCAAGGCCACCAACGTCGGCGCCCCTGGCGGCGATCGAGGGGCTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            TACTACGACGATTCCAAGGCCAACGTCGGCGCCCGCCCTGGCGGCGATCGAGGGGCTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                GGTGCCGACATCGACGGCAAGCTGGTGCTGCTCGCCGGCGGAGACGGCAAGGGCCCCGAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         TTCCATGACCTGCGCGGGCCGGTCGCGCCTTCTGCCGGGCGGTGGTACTGCTTGGCCGT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    GACGCCGGGCTGATTGCCCCAGGCACTGGGCAACGCGGTACCGCTGGTGCGCGTCGCAACG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              CTGGACGAAGCAGTCCGGCAGGCCGCCGAGGTGGCCGCGAAGGCGATGCGGTGCTGTTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        GCCAAAGCCGTAGAGGAGCTAGCGTGA 1397
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ВР
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    DNA; 1317
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    AAS56341 standard;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               13-FEB-2002
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  901
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          961
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   1021
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1081
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         1141
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1311
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             1261
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  1371
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        1321
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        AAS56341;
                                                       421
                                                                                                                                                                                                                                                                                 601
                                                                                                                                                                                                                                                                                                                                                          661
                                                                                                                                                                                                                                                                                                                                                                                                                                                                        831
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            951
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         1131
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    1191
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            1251
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  1201
                   471
                                                                                                                                                                     591
                                                                                                                                                                                                        541
                                                                                                                                                                                                                                                                                                                     711
                                                                                                                                                                                                                                                                                                                                                                                              771
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   891
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       841
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1011
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1071
                                                                                            531
                                                                                                                              481
                                                                                                                                                                                                                                            651
                                                                                                                                                                                                                                                                                                                                                                                                                                   721
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              781
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 RESULT 3
                                                                                                                                                                                                                                                                                                                                                                                                                               a .
                                                                                                                              ద
                                                                                                                                                                     ò
                                                                                                                                                                                                        g
                                                                                                                                                                                                                                                                             QQ
                                                                                                                                                                                                                                                                                                                     ò
                                                                                                                                                                                                                                                                                                                                                        셤
                                                                                                                                                                                                                                                                                                                                                                                            δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                      δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   δλ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ŏ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           qq
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       δy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ŏ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            δy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             엄
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          X X X Z
                                                     셤
                                                                                          δ
                                                                                                                                                                                                                                            ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ŏ
                                                                                                                                                                                                                                                                                                                                                                    The invention relates to antisense inhibitors of genes essential to prokaryotic cellular proliferation, their use in identifying the genes, their use in the discovery of novel antibiotics, the essential genes themselves and the encoded proteins. The prokaryotes used are Escherichia coli, Staphylococcus aureus, Salmonella typhi, Klebsiella premoniae, Pseudomonas aeruqinosa and Enterococcus facealis. The invention is also useful for the identification of potential new targets for antibiotic development. The antisense nucleic acids can also be used to antibiotic capable of binding to the expressed proteins, and to obtain antibodies capable of binding to the expressed proteins. The proteins can be used to screen compounds in rational drug discovery programmes. The antisense nucleic acid sequence is also useful to screen for homologous nucleic acids which are required for cell proliferation in a wide variety of organisms. The present sequence encodes an essent is a wide variety of organisms. The present sequence encodes an essent manner of the coll proliferation in the content of the coll proliferation in the coll organism of the coll proliferation in the content of the coll organism of the capable of the coll proliferation in the coll organism of the capable of coll proliferation in the coll organism of the coll organism of the coll organism of the capable of the capa
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          110
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   170
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              230
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         290
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              240
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      350
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               410
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          470
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               420
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         300
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        GATCTCTTCGCCCGCGAGGCGAAGGCCCCGATCGTCGCCATCACCGGTTCCAACGCGAAG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ATGAGCCTGATCGCCTCCGACCACTTCCGCATCGTTGTCGGCCTCGGCCAGGCGCGATG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              TCCCTGGTGCGCTACCTGGCGCGCGCGCGTTGCCTTTCGCCGTGGTCGATACCCGAGAG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     GAACTCGACGCCGAGTTCCTCTGCTCCGCCGCGAACTCTATGTCAGCCCCGGCTTGTCG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             AACCCGCCGGAGCTGGCCACCCTGCGTGCCCAGTATCCGCAGGTGGAAGTGCGTTGCGGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    CTGCGCACCCCTGCGCTGCTACAGGCCGCCGCGAAAGGCGTGCGCATCTCCGGTGACATC
                                                                                                                                                                     Carr GJ;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ő
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            92.9%; Score 1347; DB 23; Length 1347; 100.0%; Pred. No. 1.3e-233; Live 0; Mismatches 0; Indels 0;
                                                                                                                                                                                                                                                                                 of.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Note: The sequence data for this patent did not form part of the printed specification, but was obtained in electronic format directly from WIPO at
                                                                                                                                                                     Trawick JD,
                                                                                                                                                                                                                                                                             New polynucleotides for the identification and development antibiotics, comprise sequences of antisense nucleic acids
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Sequence 1347 BP; 214 A; 453 C; 453 G; 227 T; 0 other;
                                                                                                                                                                     Wall D,
                                                                                                                                                                                                                                                                                                                                    Claim 27; Seq ID No 7912; 511pp; English.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ftp.wipo.int/pub/published_pct_sequences.
                                                                                                                                                                   Zyskind JW,
                 2000US-207727P.
2000US-242578P.
2000US-253625P.
2000US-257931P.
2000US-206848P
                                                                                        16-FEB-2001; 2001US-269308P.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Best Local Similarity 100.
Matches 1347; Conservative
                                                                                                                                                                   KL,
                                                                                                                              (ELIT-) ELITRA PHARM INC
                                                                                                                                                                   Ohlsen |
Xu HH;
                                                                                                                                                                                                                      WPI; 2001-611495/70.
P-PSDB; AAU36416.
               26-MAY-2000;
23-OCT-2000;
27-NOV-2000;
22-DEC-2000;
                                                                                                                                                                 Haselbeck R,
                                                                                                                                                                                     Yamamoto RT,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         51
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   111
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            171
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       231
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               351
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  301
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           361
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    291
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        411
```

g δ g

õ

셤

ò g à 셤 õ g

õ

a

à

```
1025
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 1085
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      1131
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1086 GGCAAGCTGGTGCTGCTGCCGGCGGGGGAGACGCCAAGGGCCCGATTTCCATGACCTGCGC 1145
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         132 GCCGCACTGC-----GTCCGGAAATCGCCCAACAGACTGAGACGATGGAAGAGGCGATG 1185
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    CGGCAGGCCGCCGAGCTGGCCCGCGAAGGCGATGCGGTGTTGTTGTCGCCGGCCTGCGCG 1325
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               1186 CGTTTGCTGGCGCCGCACGTTCAGCCGGGTGATATGGTGGTGCTGTTGTCGCCCCCCTGCGCC 1245
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          AGCCTGGACATGTTCAAGAACTTCGAAGAACGCGGACGCCTGTTCGCCAAAGCCGTAGAG 1385
                                                                                                          247 AGCGCTGCCGCCGCGCGGGGGAAATTGTCGGCGGATATCGAACTGTTTTGCCGCGAA 306
                                                                                                                                                                       428
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              785
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  845
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         965
                                                                                                                                                                                                                                                                                                    426
                                                                                                                                                                                                                                                                                                                                                                                          486
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               909
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        666 TTCCGCGGTGCCCGCCAGGTCGTGGTGAATCGCGCCGATGCCCTGACCCGACCGCTGATC 725
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   999
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   905
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       7117
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          777
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            837
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  897
                                                                                                                                                                                                778 AAAGAGATGAAGCTTTCCGGTCAGCATAACTATACCAATGCGTTAGCGGCGCTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  AAGGCCACCAACGTCGGCGCCCCTGGCGGCGATCGAGGGGCTGGGTGCCGACATCGAC
CTCTGCTCCGCCCGCGGAACTCTATGTCAGCCCCGGCTTGTCGCGGCTGCGCACCCCTGCGCTG
                                        CTCTTAGCGGCGGATTTAATCGTCGCCAGCCCTGGTATTGCTCTGGCGCATCCCTCTTT
                                                                                                                                                                         GCGAAGGCCCCGATCGTCGCCATCACCGGTTCCAACGCGAAGAGCACCGTGACCACCCTG
                                                                                                                                                                                                                                                             GTGGGCGAAATGGCGGTGGCCGCGGGACAAGCGTGTCGCCGTCGGCGCGCAACCTCGGCACC
                                                                                                                                                                                                                                                                                      CCGGCGCTCGACCTGCCGACGACATCGAGCTGTACGTGTTGGAGCTGTCGAGCTTC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                             CAATTGGAAACTACCTCAAGTTTGCAAGCGGCGGCGCGAACGGTGCTCAACGTCACTGAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              726 GCCGATACCGTGCCGTGCTGGTCGTTCGGCCTGAACAAGCCGGACTTCAAGGCTTTCGGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         CTGATCGAGGAAGACGCCAGAAGTGGCTGGCGTTCCAGTTCGACAAGCTGCTGCCGGTT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             718 CTTAATCGTCAGCAGGCGAAACCTGGCTACGAGTCAAAGGTGAGAAGGTGCTGAACGTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             966 CTGGCTCCATCGCTGCCAGTGGGTACGCGAGGGCGAGGGCGTGAGCTACTACGACGATTCC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      GCCCAGGCACTGGGCAACGCGGTACCGCTGGTGCGCGTCGCAACGCTGGACGAAGCAGTC
                                                                                   309 GTACAGGCCGCCGCGAAAGGCGTGCGCATCTCCGGTGACATCGATCTTTCGCCCGCGAG
                                                                                                                                                                                                                                                                                                                                                                                          CCGCCCTGATGCTGCTGGATGCCGATTGGATTGTACGTGCTGGAATTATCCAGTTTC
                                                                                                                                                                                                                                                                                                                                                                                                                                  CAGCTGGAAACCTGCGATCGCCTCAACGCCGAGGTGGCGACCGTGCTGAACGTCAGCGAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        GGCGAACTGAAGATCCGTGGCGCCCACAACTATTCCAACGCGCTCGCCGCGTGGCGCTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         1146 GAGCCGGTCGCGCGTTCTGCCGGGCGGTGGTACTGCTTGGCCGTGACGCCGGGCTGATT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      1072 CGCTATCTGACCGGCGCATCGTATCCGCCTGTATTGCTTTTGGGCGCGGATGGCGCGCAGCTT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        GACCATATGGATCGCTA---CGACGGCATGGCTGACTACCACCTGGCCAAGCACCGGATC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     607 TACGAGAAAGGCGAAAGTGTGCGTAGTGAATGCCGATGACGCGTTGACGATGCCGGTACGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                             487
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  786
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   1026
                                        187
                                                                                                                                                                       369
                                                                                                                                                                                                                  307
                                                                                                                                                                                                                                                             429
                                                                                                                                                                                                                                                                                                    367
                                                                                                                                                                                                                                                                                                                                               489
                                                                                                                                                                                                                                                                                                                                                                                          427
                                                                                                                                                                                                                                                                                                                                                                                                                                     549
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        609
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     846
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                1012
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 1206
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          1326
                                 g
                                                                                                                            a
                                                                                                                                                                                                                  셤
                                                                                                                                                                                                                                                                                                                                                                                       g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                         g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              q
                                                                                   à
                                                                                                                                                                       ò
                                                                                                                                                                                                                                                             ò
                                                                                                                                                                                                                                                                                                    g
                                                                                                                                                                                                                                                                                                                                            ò
                                                                                                                                                                                                                                                                                                                                                                                                                                     ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        qq
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         å
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         d
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    The invention relates to antisense inhibitors of genes essential to prokaryotic cellular proliferation, their use in identifying the genes, their use in the discovery of novel antiblotics, the essential genes themselves and the encoded proteins. The prokaryotes used are Escherichia coli, Staphylococcus aureus, Salmonella typhi, Klebsiella pneumoniae, Pseudomonas aeuquinosa and Enterococcus faccalis. The invention is also useful for the identification of potential new targets for antibiotic development. The antisense nucleic acids can also be used to aftentify proteins used in prolliferation, to express these proteins, and to obtain antibodies capable of binding to the expressed proteins. The proteins can be used to screen compounds in rational drug discovery programmes. The antisense nucleic acid sequence is also useful to screen corporation proteins. The antisense nucleic acid sequence and are incliferation in a wide variety of organisms. The present sequence encodes an essential prokaryotic cellular proliferation protein.

Note: The sequence data for this patent did not form part of the printed specification, but was obtained in electronic form part form the contract of the printed specification, but was obtained in electronic
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             GACCACTTCCGCATCGTTGTCGGCCTCGGCAAGAGCGGCATGTCCCTGGTGCGCTACCTG 128
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   GCGCGCCCGCGCCTTGCCCTTTCGCCGTGGTCGATACCCGAGAGAACCCGCGGAGCTGGCC 188
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ACCCTGCGTGCCCAGTATCCGCAGGTGGAAGTGCGTTGCGGCGAACTCGACGCCGAGTTC 248
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     GACAAAAACGTCGTCATTATCGGTCTGGGCTTAACCGGACTCTCTTGCGTGGACTTTTTT 75
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        G;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Carr
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Score 332.8; DB 23; Length 1317;
Pred. No. 3.6e-51;
0; Mismatches 552; Indels 33;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     oę.
                  typhi DNA for cellular proliferation protein #374.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Trawick JD,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              New polynucleotides for the identification and development antibiotics, comprise sequences of antisense nucleic acids
                                                          ds; prokaryotic cellular proliferation gene; antibacterial; drug design.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Sequence 1317 BP; 258 A; 341 C; 427 G; 291 T; 0 other;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Wall D,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ftp.wipo.int/pub/published_pct_sequences.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Claim 27; Seq ID No 9978; 511pp; English
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Ohlsen KL, Zyskind JW,
                                                                                                                                                                                                                                                                                               2000US-191078P.
2000US-206848P.
2000US-20722P.
2000US-242578P.
2000US-253625P.
2000US-253625P.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           23.0%;
56.1%;
                                                                                                                                                                                                                                                         21-MAR-2001; 2001WO-US09180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    747; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                           (ELIT-) ELITRA PHARM INC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Xu HH;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   2001-611495/70
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Local Similarity
                                                                                                                          Salmonella typh1.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          PSDB; AAU38482
                                                             ds;
                                                                                                                                                                     WO200170955-A2.
                                                                                                                                                                                                                                                                                                                                                              23-OCT-2000;
27-NOV-2000;
22-DEC-2000;
16-FEB-2001;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Haselbeck R,
                                                                                                                                                                                                                                                                                                                        23-MAY-2000;
26-MAY-2000;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Yamamoto RT,
                                                                                 antibiotic;
                                                                                                                                                                                                                                                                                                    21-MAR-2000;
                    Salmonella
                                                                                                                                                                                                              27-SEP-2001
                                                             Antisense;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             69
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                129
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       189
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        16
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Best Loca
Matches
```

g

à

셤

à 셤

ð

S

199

86

259 197 319 257 379 317 439 377 437 559 497 619 557 919 617 736 677 964 728 856 788 916 848

```
1023 TITGITGCTGGGTGGCGATGGTAAATCGGCGGACTTTAGCCCACTGGCGCGCTTACCTGAA 1082
                                                                                                                                                                                                                                                                                                                                                                                                                                                      440 GGCGGTGGCCGCGGGACAAGCGTGTCGCCGTCGGCGAACCTCGGCACCCCGGCGCGTCGA 499
                                      140 CTTGCCTTTCGCCGTGGTCGATACCCGAGAGACCGCCGGAGCTGGCCACCCTGCGTGC
                                                                                                                                                                                                                              198 AGATCTGATTGTCGCCAGCCATTGCACTGGCGCATCCATAAGCGCTGCCGC
                                                                                                                                                                                                                                                                                                               258 TGATGCCGGAATCGAAATCGTTGGCGATATCGAGCTGTTCTGTCGCGAAGCACAAGCACC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 678 ACGCTGCGTCAGCTTTGGCGTCAACATGGGTGACTATCA------CCTGAATCATCA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              849 AGGGTTACCGCGTGCCAGCAGCCTGAAAGCGTTAACCACATTCACTGGTCTGCCGCATCG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    CTGCCAGTGGGTACGCGAGCGCAGGGCGTGAGCTACGACGATTCCAAGGCCACCAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             969 CGTCGGCAGTACGGAAGCGCGCTGAATGGCCTG-----CACGTAGACGCCACACTGCA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    1157 GCGCTTCTGCCGGGCGGTGGTACTGCTTGGCCGTGACGCCGGGCTGATTGCCCAGGCACT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           -----AAGCCGTAGAACGCCACACGGGCAGTCTGAATGATGATGGCTGATGGCGGC
                                                                                                                                                                                                                                                                                        320 CGCGAAAGGCGTGCGCATCTCCGGTGACATCGATCTTTCGCCCGCGAGGCGAAGGCCCC
                                                                                                                                                                                                                                                                                                                                                                       380 GATCGTCGCCATCACCGGTTCCAACGCGAAGAGCACCGTGACCACCCTGGTGGGCGAAAT
                                                                                                                                                                                                                                                                                                                                                                                                               318 GATTGTGGCGATTACCGGTTCTAACGGCAAAAGCACGGTCACCACCGCTAGTGGGTGAAAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          CTGCGATCGCCTCAACGCCGAGGTGGCGACCTGCAACGTCAGCGAAGACCATATGGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                558 TCGCTATCCGTTTGGTTTACAACAGTATCGTGCAGCAAAACTGCGCATTTACGAAAACGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               618 GAAAGTTTGCGTGGTTAATGCTGATGATGCCTTAACAATGCCGATTCGCGGTGCGGATGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        737 GCCGTGCTGGTCGTTCGGCCTGAACAAGCCGGACTTCAAGGCTTTCGGCCTGATCGAGGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       797 AGACGGCCAGAAGTGGCTGGCGTTCCAGTTCGACAAGCTGCTGCCGGTTGGCGAACTGAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      GATCCGTGGCGCCCACAACTATTCCAACGCGCTCGCCGCGCTGGCGCTTGGGGT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     917 CGGCCTGCCGTTCGACGCCATGCTCGGCGCGCTGAAGGCGTTTTTCCGGCCTGGCTCATCG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           909 CTTTGAAGTTGTGCTGGAGCATAACGGCGTACGTTGGATTAACGATTCGAAAGCGACCAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   1037 CGTCGCCCCCCTGGCGCCGATCGAGGGGCTGGGTGCCGACATCGACGGCAAGCTGGT
                                                              260 CCGCGAACTCTATGTCAGCCCCGGCTTGTCGCTGCGCACCCCTGCGCTGGTACAGGCCGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         500 CCTGCTGGCCGACGACATCGAGCTGTACGTGTTGGAGCTGTCGAGCTTCCAGCTGGAAAC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       620 TCGCTA---CGACGCCATGGCTGACTACCACCTGGCCAAGCACCGGGATCTTCCGCGGTGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         677 CCGCCAGGTCGTGGTGAATCGCGCCGATGCCCTGACCCGACCGCTGATCGCCGATACCGT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     1097 GCTGCTCGCCGGCGGAGACGGCAAGGGCGCCGATTTCCATGACCTGCGCGAGCCGGTCGC
                                                                                                                       200 CCAGTATCCGCAGGTGGAAGTGCGTTGCGGCGAACTCGACGCCGAGTTCCTCTGCTCCGC
                                                                                                                                                                146
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        260
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      857
                                                                                                                                                                                                                                               g
                                                                                                                                                                                                                                                                                                                              g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ŏ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            g
                                                                               셤
                                                                                                                                                            셤
                                                                                                                                                                                                        ò
                                                                                                                                                                                                                                                                                        ò
                                                                                                                                                                                                                                                                                                                                                                         ò
                                                                                                                                                                                                                                                                                                                                                                                                               a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ద
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           g
                                        ò
                                                                                                                       ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                        ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 The present invention describes a purified or isolated nucleic acid
sequence (I) consisting essentially of one of the 93 nucleotide sequences
given in AARB1202 to AARB1294, where expression of the nucleic acid in a
curroorganism is capable of inhibiting proliferation of a microorganism.

(I) have antibacterial and antibiotic activities, and can be used in
gene therapy. Expression of (I) in a microorganism inhibits proliferation
of the microorganism, and the manufactured antibiotic is useful for
reducing the activity or level of a gene product required for
reducing the activity or level of a gene product required for
proliferation of a microorganism in a subject, specifically humans. The
nucleic acids that inhibit bacterial growth or proliferation can be used
as antisense therapeutics for killing bacteria. In addition to
therapeutic applications, the nucleic acid sequences complementary to
sequences required for proliferation can be used as diagnostic tools.
For example, nucleic acid probes complementary to proliferation-required
sequences that are specific for particular species of microorganisms can
be used as probes to identify particular microorganism species in
be used as probes to identify particular microorganism species in
clinical specimens. AAH81295 to AAR81487 encode the Escherichia coli
proteins given in AAS98239 to AAS98411, and AAH81488 to AAH81491

represent oligonucleotides, which are used in the exemplification of the
Gaps
                                                                                                                                                                                                                                                                                                                            Escherichia coli protein encoding nucleotide sequence SEQ ID NO:259
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Novel nucleic acids encoding proteins required for Escherichia coli
proliferation, useful for screening for antimicrobial agents -
                                                                                                                                                                                                                                                                                                                                                   antimicrobial; antibacterial; antibiotic; gene therapy; diagnosis; bacterial growth inhibition; ds.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Match 19.2%; Score 278.6; DB 22; Length 1317; Local Similarity 53.7%; Pred. No. 2e-41; les 709; Conservative 0; Mismatches 579; Indels 33;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Sequence 1317 BP; 294 A; 323 C; 400 G; 300 T; 0 other;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Claim 9; Page 388-389; 596pp; English
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       3
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Zyskind
                                                                                                                                                                                                      BP
                                                                                                                                                                                                      AAH81460 standard; DNA; 1317
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              19-DEC-2000; 2000WO-US34419
                                                         GAGCTAGCGTGA 1397
                                                                                                  GAGTTAGGTTGA 1317
                                                                                                                                                                                                                                                                                        (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               (ELIT-) ELITRA PHARM INC.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Forsyth RA, Ohlsen KL,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          WPI; 2001-457376/49.
P-PSDB; AAG98404.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         present invention
                                                                                                                                                                                                                                                                                                                                                                                                                                                        Escherichia coli
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              WO200148209-A2
                                                                                                                                                                                                                                                                                   21-SEP-2001
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      23-DEC-1999;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       05-JUL-2001
                                                         1386
                                                                                                                                                                                                                                               AAH81460;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Best Loca
Matches
                                                                                                                                                            RESULT 4
AAH81460
                   음
                                                                                                                                                                                                                                             ð
                                                         ò
                                                                                                셤
```

1036

916 908 1022 1156

1096

1216 1141

g

= =

= = = =

= = = = =

ŝ

33;

145

98

259 197 257

439 377 559 497 619 557 9/9 617 736 677 796

```
140 CTTGCCTTTCGCCGTGGTCGATACCCGAGAGCACCGGCGGGAGCTGGCCACCCTGCGTGC 199
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               GGCGGTGGCCGCGGACAAGCGTGGCCGTCGGCGAACCTCGGCACCCCGGCGCGCTCGA 499
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       GCAGGGCGAAACCTGGCTGCGGGTTAAAGGCCGAGAAGTGCTGAATGTGAAAGAGATGAA 788
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   200 CCAGTATCCGCAGGTGGAAGTGCGTTGCGGCGAACTCGACGCCGAGTTCCTCTGCTCCGC
                                                                                                                                                                                                                                                                                                                                                       -----AAGCCGTAGAACGCCACACGGCAGTCTGAATGATGATGGCTGATGGCGGC
                                                                                                                                                                                                                                                                                                                                                                                          260 CCGCGAACTCTATGTCAGCCCCGGCTTGTCGCTGCGCACCCCTGCGCTGGTACAGGCCGC
                                                                                                                                                                                                                                                                                                                                                                                                           198 AGATCTGATTGTCGCCAGTCCGGTATTGCACTGGCGCATCCTTAAGCGCTGCCGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                       CGCGAAAGGCGTGCGCATCTCCGGTGACATCGATCTTCGCCCGCGGAGGCGAAGGCCCC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     258 TGATGCCGGAATCGAAATCGTTGGCGATATCGAGCTGTTCTGTCGCGGAAGCACGACCC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   GATCGTCGCCATCACCGGTTCCAACGCGAAGAGCACCGTGACCACCCTGGTGGGCGGAAAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             CCTGCTGGCCGACGACATCGAGCTGTACGTGTTGGAGCTGTCGAGCTTCCAGCTGGAAAC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           CTGCGATCGCCTCAACGCCGAGGTGGCGACCGTGCTGAACGTCAGCGAAGACCATATGGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           TCGCTA---CGACGCCATGGCTGACTACCACCTGGCCAAGCACCGGATCTTCCGCGGTGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    CCGCCAGGTCGTGGTGATCGCGCCGATGCCCTGACCCGACCGCTGATCGCCGATACCGT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  GAAAGTTTGCCTGGTTAATGCTGATGCCTTAACAATGCCGATTCGCGGTGCGGATGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 GCCGTGCTGGTCGTTCGGCCTGAACAAGACCGGACTTCAAGGCTTTCGGCCTGATCGAGGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ACGCTGCGTCAGCTTTGGCGTCAACATGGGTGACTATCA-----CCTGAATCATCA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         GATCCGTGGCGCCCCACACTATTCCAACGCGCTCGCCGCGCGCTGGCGCTTGGGGT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        789 ACTITICCGGGCAGCATAACTACACCAATGCGCTGGCGGGGCTGGCGTGGCAGATGCTGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       CGGCCTGCCGTTCGACGCCATGCTCGGCGCGCTGAAGGCGTTTTCCGGCCTGGCTCATCG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    TCGCTATCCGTTTTGGTTTACAACAGTATCGTGCCAAAACTGCGCATTTACGAAAACGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              AGACGGCCAGAAGTGGCTGGCGTTCCAGTTCGACAAGCTGCTGCCGGTTGGCGAACTGAA
                                                                                                                                           Length 1317;
a wide variety of organisms. The present sequence encodes an essential prokaryotic cellular proliferation protein. Note: The sequence data for this patent did not form part of the printed specification, but was obtained in electronic formet directly from WIPO at
                                                                                                                                      Score 278.6; DB 23; Length
Pred. No. 2e-41;
0; Mismatches 579; Indels
                                                                                                           Sequence 1317 BP; 294 A; 323 C; 400 G; 300 T; 0 other;
                                                                              ftp.wipo.int/pub/published_pct_sequences
                                                                                                                                                                         Conservative
                                                                                                                                                        al Similarity
709; Conserv
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               440
                                                                                                                                                                                                                                                                                                                                                             146
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             200
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       620
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   677
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                678
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          729
                                                                                                                                          Query Match
Best Local 3
                                                                                                                                                                                                                                   27
                                                                                                                                                                                                                                                                                               87
                                                                                                                                                                                                                                                                                                                                                                                                                                                       320
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  318
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              378
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          438
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         260
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        498
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    558
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  618
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 737
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              797
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           857
                                                                                                                                                          Best Loca
Matches
   8888888
                                                                                                                                                                                                                                   g
                                                                                                                                                                                                                                                                                                                                                          g
                                                                                                                                                                                                                                                                                                                                                                                                                                                   à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              셤
                                                                                                                                                                                                                                                                  õ
                                                                                                                                                                                                                                                                                            g
                                                                                                                                                                                                                                                                                                                           à
                                                                                                                                                                                                                                                                                                                                                                                          à
                                                                                                                                                                                                                                                                                                                                                                                                                 g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  용
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ò
                                                                                           The invention relates to antisense inhibitors of genes essential to prokaryotic cellular proliferation, their use in identifying the genes, their use in the discovery of novel antibiotics, the essential genes themselves and the encoded proteins. The prokaryotes used are Escherichia coli, Staphylococcus aureus, Salmonella typhi, Klebsiella preumoniae, Pseudomonas aeruginosa and Enterococcus faecalis. The invention is also useful for the identification of potential new targets for antibiotic development. The antisense nucleic acids can also be used to identify proteins used in proliferation, to express these proteins, and to obtain antibodies capable of binding to the expressed proteins, and the proteins can be used to screen compounds in rational drug discovery programmes. The antisense nucleic acid sequence is also useful to screen for homologous nucleic acids which are required for cell proliferation in
              GGGCAACGCGGTACCGCTGGTGCGCGTCGCAACGCTGGACGAAGCAGTCCGGCAGGCCGC
                                                                            CGAGCTGCCCCGCGAAGGCGATGCGGTGCTGTTGTCGCCGGGCCTGCGCGAGCCTGGACAT
                                   -----GCCCGGAAGTGGCAGAACAAACTATGGAACAGGCGATGCGCTTGCTGGC
                                                                                                                                        GTTCAAGAACTTCGAAGAACGCGGACGCCTGTTCGCCAAAGCCGTAGAGGAGCTAGCGTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       GJ;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Carr
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  of
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Trawick JD,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                New polynucleotides for the identification and development antibiotics, comprise sequences of antisense nucleic acids
                                                                                                                                                                                                                                                                                                                                                                                                                                      ds; prokaryotic cellular proliferation gene; antibacterial; drug design.
                                                                                                                                                                                                                                                                                                                                                                                                      coli DNA for cellular proliferation protein #17
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ď
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Wall
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Claim 27; Seq ID No 5932; 511pp; English.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Zyskind JW,
                                                                                                                                                                                                                                                                                                           AAS52295 standard; DNA; 1317 BP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         2000US-206848P.
2000US-207727P.
2000US-245578P.
2000US-253625P.
2000US-25931P.
2001US-269308P.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             21-MAR-2001; 2001WO-US09180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           2000US-191078P
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Ohlsen KL,
Xu HH;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      (ELIT-) ELITRA PHARM INC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 2001-611495/70.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Escherichia coli
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 P-PSDB; AAU34436
                                                                                                                                                                                                                                A 1317
                                                                                                                                                                                                    A 1397
                                                                                                                                                                                                                                                                                                                                                                                                                                      ds;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               WO200170955-A2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        23-MAY-2000;
26-MAY-2000;
23-OCT-2000;
27-NOV-2000;
22-DEC-2000;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Haselbeck R,
Yamamoto RT,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      16-FEB-2001;
                                                                                                                                                                                                                                                                                                                                                                         13-FEB-2002
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            21-MAR-2000;
                                                                                                                                                                                                                                                                                                                                                                                                                                     Antisense; cantiblotic;
                                             1142
                                                                          1277
                                                                                                                                      1337
                                                                                                                                                                    1257
                                                                                                                                                                                                    1397
                                                                                                                                                                                                                                  1317
                                                                                                                                                                                                                                                                                                                                           AAS52295
                                                                                                      g
                                                                                                                                                                    g
                                                                                                                                                                                                                                                                                                                             ద
                                                                                                                                      à
                                                                                                                                                                                                   à
                                                                                                                                                                                                                                g
              à
                                                                            ð
```

```
682 GATGAAGCGTGCCGGCGCGCGAGGTAAAATGGTTTTCGTTGGAACACGAAGCTGATTTCTG
                                                                                                                                                                                                                  Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  491
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     629
                                                                                                                                                                                                                             Best Loca
Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          g
 ò
                                                                                                                                                                                                                                                                                                               a
                                                                                                                                                                                                                                                                                                                                                    g
                                                                                                                                                                                                                                                                                                                                                                         ò
                                                                                                                                                                                                                                                                                                                                                                                          g
                                                                                                                                                                                                                                                                                                                                                                                                             ò
                                                                                                                                                                                                                                                                                                                                                                                                                                셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                     ŏ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                     q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              g
                                                                                                                                                                                                                                                                          D
                                                                                                                                                                                                                                                                                                                                    ò
                                                                                                                                                                                                                                              CTGCCAGTGGGTACGCGAGCGCAGGCCGTGAGCTACTACGACGATTCCAAGGCCACCAA 1036
                                                 1197 TCCGCGGTTTCAGCCGGCGATATGGTTCTGCTCCCCCAGCCTGTGCCAGCCTTGATCA 1256
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Masignani V, Mora M;
Scalato E, Scarselli M;
                                                                                                                                                                                                                                                                                                                                                                                                                      Neisseria meningitidis; Neisseria gonorrheae; antigen; vaccine; antigenic; diagnosis; immunogenic; infection; meningitis; septicaemia; antibacterial; gene therapy; ds.
                                     CGTCGGCGCCCCCTGGCGGCGATCGAGGGGGTGCGGACATCGACGGCAAGCTGGT
                                                                           GCTGCTCGCCGGCGGAGACGGCAAGGGCGCCGATTTCCATGACCTGCGCGAGCCGGTCGC
                                                                                                                                                                                             CGAGCTGGCCCGCGAAGGCGATGCGGTGCTGTTGTCGCCGGCCTGCGCGAGCCTGGACAT
                                                                                        1023 TITGTEGCTGGGTGGCGATGGTAAATCGGCGGGACTTTAGCCCCACTGGCGCGTTACCTGAA
                                                                                                                 1157 GCGCTTCTGCCGGGCGGTGGTACTGCTTGGCCGTGACGCCGGGCTGATTGCCCAGGCACT
                                                                                                                                                        GGGCAACGCGGTACCGCTGGTGCGCGTCGCAACGCTGGACGAAGCAGTCCGGCAGGCCGC
                                                                                                                                                                          1142 -----GCCCGGAAGTGGCAGAACAAACCGAAACTATGGAACAGGCGATGCGCTTGCTGGC
                                                                                                                                                                                                                                   GTTCAAGAACTTCGAAGAACGCGGACGCCTGTTCGCCAAAGCCGTAGAGGAGCTAGCGTG
                  CTTTGAAGTTGTGCTGGAGCATAACGGCGTACGTTGGATTAACGATTCGAAAGCGACCAA
                                                                                                                                                                                                                                                                                                                                                                                                    Neisseria meningitidis ORF 090 partial DNA sequence SEQ ID NO:301
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Fraser C, Galeotti C, Grandi G, Hickey E,
Petersen J, Pizza M, Rappuoli R, Ratti G,
Tettelin H, Venter JC;
                                                                                                                                                                                                                                                                                                                                           AAZ53175 standard; DNA; 1380
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   98US-0094869.
98US-0098994.
98US-0099062.
98US-0103749.
98US-0103794.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       99WO-US09346
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           98US-0083758
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             99US-0121528
                                                                                                                                                                                                                                                                                                                                                                                  (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         GENO-) INST GENOMIC RES.
                                                                                                                                                                                                                                                                                                                                                                                                                                                              Neisseria meningitidis
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   WPI; 2000-062150/05.
P-PSDB; AAY74413.
                                                                                                                                                                                                                                                                         1397 A 1397
                                                                                                                                                                                                                                                                                           A 1317
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 CHIR ) CHIRON
                                                                                                                                                                                                                                                                                                                                                                                 21-MAR-2000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                09-OCT-1998;
09-OCT-1998;
09-OCT-1998;
25-FEB-1999;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                WO9957280-A2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       30-APR-1999;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           01-MAY-1998;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    31-JUL-1998;
02-SEP-1998;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    11-NOV-11999
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      02-SEP-1998
                                                                          1097
                                                                                                                                                                                             1277
                                    1037
                                                                                                                                                       1217
                                                                                                                                                                                                                                   1337
                                                                                                                                                                                                                                                                                           1317
                                                                                                                                                                                                                                                                                                                                                               AA253175;
                                                                                                                                                                                                                                                                                                                         AAZ53175/
ò
                  g
                                     õ
                                                       셤
                                                                          ò
                                                                                              셤
                                                                                                                 à
                                                                                                                                   셤
                                                                                                                                                       ò
                                                                                                                                                                          g
                                                                                                                                                                                             å
                                                                                                                                                                                                               d
                                                                                                                                                                                                                                   ö
                                                                                                                                                                                                                                                      а
                                                                                                                                                                                                                                                                          ò
                                                                                                                                                                                                                                                                                           g
```

```
1283
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    1043
                                                                                                                                                 AA253015 to AA254536, AA254577 to AA254615, and AAY74253 to AAY75941 represent novel Neisseria meningitis and N. gonorrheae polynucleotides and polypeptides. AAZ54573 to AAZ54576 and AA254616 to AAZ55473 represent PCR primers used in the exemplification of the present invention. The polypeptides, the polynucleotides, antibodies and compositions of the invention can be used as vaccines, as diagnostic reagents, and as immunogenic compositions. The polypeptides can be used in the manufacture of medicaments for treating or preventing infection due to Neisserial bacteria (e.g. meningitis and septicaemia), to detect the presence of Neisseria bacteria, or to raise antibodies. They may also be used to screen for agonists or antagonists, which may themselves may also be used in gene therapy protocols.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               1282 CGCGGAGGTTGCTGCCGTATGATGCGGAGCTGAAGCCGGAACGCGTGTCGCAAATCGGTAA 1223
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 199
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 430
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 983
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 490
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  538
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            598
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                658
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             743
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              718
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  923
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            863
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             803
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           719 GCTG-ATCGCCGATACCGTGCCGTGCTGGTCGTTCGGCCTGAACAAGCCGGACTTCAAGG 777
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          140 CTTGCCTTTCGCCGTGGTCGATACCCGAGAACCCGCCGGAGCTGGCCACCTGCGTGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               320 CGCGAAAGGCGTGCGCATCTCCGGTGACATCGTTCTTCGCCCGCGAGGCGAAGGCCCC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     431 GGGCGAAATGGCGGTGGCCGCGGACAAGCGTGTCGCCGTCGGCGGCAACCTCGGCACCCC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                CGTCAGCGAAGACCATATGGATCGCTACGACGGCATGGCTGACTACCACCTGGCCAAGCA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 CCGGATCTTCCGCGGTGCCCGCCAGGTCGTGGTGATCGCGCCGATGCCCTGACCCGACC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              742 CAAGATTTTCCGTGGCGACGCGTGCAGGTTTTGAATGCGGACGATGCGTTCTGCCGCGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     260 CCGCGAACTCTATGTCAGCCCCGGCTTGTCGCTGCGCACCCCTGCGCTGGTACAGGCCGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  982 CGGCTATCTCTGTATCAAGTGCGGGCTGGATACCGTTATCGCGGGCAATATCGGCACGCC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                539 GTCGAGCTTCCAGCTGGAAACCTGCGATCGCCTCAACGCCGAGGTGGCGAACGTGCTGAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        380 GATCGTC-----GCCATCACCGGTTCCAACGCGAAGAGCACCGTGACCACCCTGGT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      922 GGTTTTGGAGGCGGAATGGCAGCGCGAAGGCAAAAAGGCGGACGTGTGGGTGTTGGAGCT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            200 CCAGTATCCGCAGGTGGAAGTGCGTTGCGGCGAACTCGACGCCGAGTTCCTCTGCTCCGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  GGCGCTCG------ACCTGCTGGCCGACGACATCGAGCTGTACGTGTTGGAGCT
Novel Neisserial polypeptides predicted to be useful antigens for
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             / Match 12.4%; Score 180; DB 21; Length 1380; Local Similarity 49.7%; Pred. No. 1.1e-23; les 662; Conservative 0; Mismatches 620; Indels 50
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Sequence 1380 BP; 292 A; 424 C; 346 G; 318 T; 0 other;
                                                                                           Claim 7; Page 286; 1453pp; English.
                                 vaccines and diagnostics
```

```
g
                                                                                                                                                                                                                                                                                                                                                                                                                                                               ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  요
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ð
                                                                                                                                                                            1077
                                                                                                                               958 TITCCGGCCTGGCTCATCGCTGCCAGTACGCGAGCGGCAGGGCGTGAGCTACTACG 1017
                                                                                                                                                                                                                   1078 ACATCGACGGCAAGCTGGTGCTGCTCGCCGGCGAGACGGCAAGGGCGCCGATTTCCATG 1137
                                                                                                                                                                                                                                                           1138 ACCTGCGCGAGCCGGTCGCGCGTTCTGCCGGGGGGGGTGCTACTGCTTGGCCGTGACGCCG 1197
                                                                                                                                                                                                                                                                                                   1198 GGCTGATTGCCCAGGCACTG---GGCAACGCGGTACCGCTGGTGCGCGTCGCACGCTGG 1254
                                                                                                                                                                                                                                                                                                                                             1255 ACGAAGCAGTCCGGCAGGCCGCCGAGCTGGCCCGCGAAGGCGATGCGGTGCTGTTGTCGC 1314
                                                                                                                                                                                                                                                                                                                          168
                                                                                                                                                                                                                                                                                                                                                                                      CGGCCTGCGCGAGCCTGGACATGTTCAAGAACTTCGAAGAACGCGGACGCCTGTTCGCCA 1374
                                                                                                                                                                                     575 TTGTCACGCAAGACATTCCGTTGCAAGGTCTGCACAACGCCGCTAACGTCATGGCTGCCG 516
                                                                                                                                                     455 TCCAAGGCCTGCCGCACCGCGTGGAAAAATCGGCGAGAAAACGGCGTGGTGTTTATCG 396
                                                TGCCGGTTGGCGAACTGAAGATCCGTGGCGCCCACAACTATTCCAACGCGCTCGCCGCGC 897
                                                                                         TGGCGCTGGGCCATGCGGTCGGCCTGCCGTTCGACGCCATGCTCGGCGCGCTGAAGGCGT 957
                                                                                                            515 TGGCTTTGTGTGAGGCCATCGGTTTGTCGCGCGAAGCATTGCTCGAACACGTCAAAACCT 456
                                                                                                                                                                                                                                                                                                                                                                                                           48
        622 GTTGGAACGCGAGACAGGCCGCCTGAAACAAGGCAATGAAG-------ATTTGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Neisseria meningitidis; Neisseria gonorrheae; genome; immunogenic;
antigen; vaccine; diagnosis; infection; antibacterial; identification;
Meningococcus B; MenB; ds.
                                                                                                                                                                         1018 ACGATICCAAGGCCACCAACGICGGCGCCGCCTGGCGGCGATCGAGGGGGCTGCCG
                                                                                                                                                                                                                                   GTTTGCAAAATCCGCTCTTCGTGATTTTGGGCGGCATGGCTAAAGGGCAGGACTTCACGC
                                                                                                                                                                                                                                                                        287 CCCTGCGCGATGCACTGGTAGGCAAAAGGCGTGTTCTTGATTGGTGTCGATGCGC
                                                                                                                                                                                                                                                                                                                        227 CGCAAATCCGCCGCGATTTGGACGCTGCGGCTTGAATATGACCGACTGCGCCACTTTGG
                                                                                                                                                                                                                                                                                                                                                                 GAGAAGCCGTTCAGACGGCATATGCCCAAGCCGAAGCAGGCGATATTGTGTTGCTCAGCC
                                                                                                                                                                                                                                                                                                                                                                                               meningitidis partial DNA sequence gnm_27 SEQ ID NO:27:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   AAA81479 standard; DNA; 69936 BP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             98US-0103794.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           99WO-US23573
                                                                                                                                                                                                                                                                                                                                                                                                                              AAGCCGTAGAGG 1386
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            04-DEC-2000 (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                  AAGCGTTTAAGG 36
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Neisseria meningitidis
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  WO200022430-A2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          08-OCT-1999;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             09-OCT-1998;
30-APR-1999;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     20-APR-2000
       178
                                                                                        868
                                               838
                                                                                                                                                                                                                                                                                                                                                                167
                                                                                                                                                                                                                                                                                                                                                                                                                             1375
                                                                                                                                                                                                                                      347
                                                                                                                                                                                                                                                                                                                                                                                                          107
                                                                                                                                                                                                                                                                                                                                                                                                                                                 47
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          AAA81479/c
                                                                  a
                          a
                                                                                        ò
                                                                                                           셤
                                                                                                                                                  qq
                                                                                                                                                                        ò
                                                                                                                                                                                          g
                                                                                                                                                                                                                 ò
                                                                                                                                                                                                                                     유
                                                                                                                                                                                                                                                          à
                                                                                                                                                                                                                                                                            a
                                                                                                                                                                                                                                                                                                   õ
                                                                                                                                                                                                                                                                                                                      g
                                                                                                                                                                                                                                                                                                                                                            g
                                                                                                                                                                                                                                                                                                                                                                                                         셤
                                                                                                                                ò
                                                                                                                                                                                                                                                                                                                                             ð
                                                                                                                                                                                                                                                                                                                                                                                    à
                                                                                                                                                                                                                                                                                                                                                                                                                             ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                셤
```

(CHIR ) CHIRON CORP

```
52260
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           52560
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            52320
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ģ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               composition can be used as a medicament (or in the manufacture of a medicament) for treating, preventing or diagnosing infection due to medicament) for treating, preventing or diagnosing infection due to medicament) for treating, preventing or diagnosing infection due to be sense the identified proteins condominated be components of vaccines against Meningococcus B; against all serotypes; and/or against all pathogenic Neissariae. Identification of sequences from the bacterium will also facilitate production of biological probes; particularly organism-specific probes. Attempts to make efficacious Meningococcus B vaccines have also been tried but none have successfully overcome antigent variability. The provision of further, complete sequences may provide an opportunity to identify secreted or surface exposed proteins that may be presumed targets for the immune system and which are not antigenically variable or at least more conserved than
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     The present invention describes methods of obtaining immunogenic proteins from Nelsseria genomic sequences. AAR81453 to AAR8143 to Proteins from Nelsseria genomic sequences. AAR81453 to AAR81451 sequences. AAR81260 to AAR81303 and AAR825620 to AAR82563 represent Nelsseria DNA sequences and their corresponding proteins; AAA81254 to AAR81255 and AAA81304 to AAR81251 represent PCR Primers used in the isolation of Nelsseria menigitidis DNA sequences; and AAR8132 to AAR81452 represent Nelsseria menigitidis MenB polynucleotide ORF agequences, which are all used in the exemplification of the present invention. The nucleic acid sequences, protein sequences, and antibodies against them, can be used in the manufacture of a composition. The
                                               Scarlato V;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         52559 cecegagerrecrecerarearecegaecreaaecegaacegrereceaareceraa
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       52619 CCTCGTCGCCGGACTCGGCGGTACGGGTATTTCCATGATTGCCTACCTGCGCAAAAACGG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            52499 GATGTTTGACGGGTTGGTGTTTTACACGGGCCGTCTGAAAGATGCGCTGGACAACGGTTT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     260 CCGCGAACTCTATGTCAGCCCCGGCTTGTCGCTGCGCACCCCTGCGCTGGTACAGGCCGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       52439 CGATATTCTGGCTCTCAGTCCCGGCATCAGCGAGCGGCAGCCGGATATTGAGGCGTTCAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        52259 CGCTATCTCTGTATCAAGTGCGGGCTGGATACCGTTATCGCGGGCAATATCGGCACGCC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           140 CTTGCCTTTCGCCGTGGTCGATACCCGAGAGAACCCGCGGAGAGCTGGCCACCCTGCGTGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       200 CCAGTATCCGCAGGTGGAAGTGCGTTGCGGCGAACTCGACGCCGAGTTCCTCTGCTCCGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        320 CGCGAAAGGCGTGCGCATCTCCGGTGACATCGATCTCTTCGCCCGCGAGGCGAAGGCCCC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          52319 GGACGACAAGGTAATTGCGATTACCGGCAGCAACGCAAAAACCACGGTAACGAGCCTGGT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      380 GATCGTC-----GCCATCACCGGTTCCAACGCGAAGACACCGTGACCACCTGGT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    431 GGGCGAAATGGCGGTGGCCGCGGACAAGCGTGTCGCCGTCGGCGCGAACCTCGGCACCCC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  GGCGCTCG------ACCTGCTGGCCGACGACATCGAGCTGTACGTGTTGGAGCT
                                                                                                                                                                                                                                                                  Isolated nucleotide sequences of Neisseria meningitidis which can be used in the diagnosis and treatment of N. meningitidis infection and other Neisserial infections, for example, N.gonorrhoea
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Sequence 69936 BP; 16512 A; 19259 C; 17399 G; 16763 T; 3 other;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  50;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Length 69936;
Tettelin H, Venter JC;
Ratti G, Scarselli M,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Query Match 12.4%; Score 180; DB 21; Length 69
Best Local Similarity 49.7%; Pred. No. 1.1e-23;
Matches 662; Conservative 0; Mismatches 620; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                     Claim 7; Page 547-567; 1760pp; English.
    ם, צ
Frazer CM, Hickey E, Peterson
Masignani V, Galeotti C, Mora
Rappuoli R, Pizza M;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                other more variable regions.
                                                                                                                                                                                  WPI; 2000-318079/27.
Frazer CM,
Masignani V
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  491
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        셤
```

```
Hickey E, 1
                                                                                                                                                                                                           Galeotti C, Mora M,
Frazer CM, Grandi G;
                                                                                                                                                                                                                                       WPI; 2000-647603/62.
                                                                                                                                                                    (CHIR ) CHIRON CORP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Similarity
                                                                    WO200066791-A1
                                                                                        09-NOV-2000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        662;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      140
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              80
                                                                                                                                                                                                 Pizza M,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Best Loca
Matches
                                ds.
     셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               음
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ð
51900
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    51445
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          51385
                                                 52139 TTCCAGCTTCCAACTGGAAAACACCGAAAGCCTGCGTCCGACTGCGGCGACGGTGCTGAA 52080
                                                                                                                                                                                                          ---ATTTGA .51853
                                                                                                                                                                                                                                      51624 GITIGCAAAATCCGCTCTTCGTGATTTTGGGCGGCATGGGTAAAGGGCAGGACTTCACGC 51565
                                                                                                                                                                                                                                                                                                                                                                                                                                             51564 CCCTGCGCGATGCACTGGTAGGCAAGGCAAAGGCGTGTTCTTGATTGGTGTCGATGCGC 51505
                                                                                                                                                                                                                                                                                                                                                                                                                                                                 1254
                                                                                                                                                                                                                                                                                                         TTTCCGGCCTGCCTCCTCCTGCCAGTGGGTACGCGAGCGGCAGGGCGTGAGCTACG 1017
                                                                                                                                                                                                                                                                                                                                             1018 ACGATTCCAAGGCCACCAACGTCGGCGCCCCTGGCGGCGGCGATCGAGGGGCTGGGTGCCG 1077
                                                                                                                                                                                                                                                                                                                                                                                    1078 ACATCGACGCCAAGCTGCTGCTGCTCGCCGGCGGAGACGGCAAGGGCGCCGATTTCCATG 1137
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            CGCCTGCGCGAGCCTGGACATGTTCAAGAACTTCGAAGAACGCGGACGCCTGTTCGCCA 1374
                                                                                                                                                                                       837
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      51504 CGCAAATCCGCCGCGATTTGGACGCTGCGGCTTGAATATGACCGACTGCGCCACTTTGG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 GCTG-ATCGCCGATACCGTGCCGTGCTCGTTCGGCCTGAACAAGCCGGACTTCAAGG
                                                                                                                                                                                     838 TGCCGGTTGGCGAACTGAAGATCCGTGGCGCCCACAACTATTCCAACGCGCTCGCCGCGC
                                                                                                                                                                                                                                                                                     51792 TGGCTTTGTGTGAGGCCATCGGTTTGTCGCGCGAAGCATTGCTCGAACACGTCAAAACCT
                                                                                                                                                                                                                                                                                                                                                                                                                         1138 ACCTGCGCGAGCCGGTCGCGCGTTCTGCCGGGCGGTGGTACTGCTTGGCCGTGACGCCG
                                                                                                                                                                                                                                                                                                                                                                                                                                                               1198 GGCTGATTGCCCAGGCACTG -- GGCAACGCGGTACCGCTGGTGCGCGTCGCAACGCTGG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      1255 ACGAAGCAGTCCGGCAGGCCGCCGAGCTGCCCGCGAAGGCGATGCGGTGCTGTTGTCGC
                                                                   599 CGTCAGCGAAGACCATATGGATCGCTACGACGGCATGGCTGACTACCACCTGGCCAAGCA
                                                                                                                                                                   51959 GATGAAGCGTGCCGGGCGCGAGGTAAAATGGTTTTCGTTGGAACACGAAGCTGATTTCTG
                                                                                                                                                                                                                                                                 GTCGAGCTTCCAGCTGGAAACCTGCGATCGCCTCAACGCCGAGGTGGCGACCGTGCTGAA
                                                                                                          659 CCGGATCTTCCGCGGTGCCCGCCAGGTCGTGAATCGCGCCGATGCCCTGACCCGACC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Neisseria meningitidis B nucleotide sequence SEQ ID NO:108
                                                                                                                                                                                                        51899 GTTGGAACGCGAGACAGGCCGCCTGAAACAAGGCAATGAAG---
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         BP.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        AAF21607 standard; DNA; 349980
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      51324 AAGCGTTTAAGG 51313
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   AAGCCGTAGAGG 1386
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               13-MAR-2001
                                                                                                                                                719
                                                                                                                                                                                                                                                                 868
                                                                                                                                                                                                                                                                                                        958
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            1315
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            AAF21607;
                                                                                                                                                                                                                                                                                                                           51732
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   1375
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              AAF21607
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         BXBXBXB
                                                                                                                                                                                                                                                                                   ద
                                                                                                                                                                                                                                                                                                                         g
                                                                                                                                                                                                                                                                                                                                            ò
                                                                                                                                                                                                                                                                                                                                                                셤
                                                                                                                                                                                                                                                                                                                                                                                                    셤
                                                                                                                                                                                                                                                                                                                                                                                                                                            a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               셤
           셤
                                                ద
                                                                                       셤
                                                                                                                           쉽
                                                                                                                                               à
                                                                                                                                                                  a
                                                                                                                                                                                    ò
                                                                                                                                                                                                     q
                                                                                                                                                                                                                          ò
                                                                                                                                                                                                                                              셤
                                                                                                                                                                                                                                                                 à
                                                                                                                                                                                                                                                                                                      δ
                                                                                                                                                                                                                                                                                                                                                                                   õ
                                                                                                                                                                                                                                                                                                                                                                                                                         à
                                                                                                                                                                                                                                                                                                                                                                                                                                                               ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ð
                              ò
                                                                   ö
                                                                                                          å
```

```
128688 GATGTTTGACGGGTTGGTGTTTTACACGGGCCGTCTGAAAGATGCGCTGGACAACGGTTT 128747
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        128628 CGCGGAGGTTGCTGCTGTATGATGCGGAGCTGAAGCCGGAACGCGTGTCGCAAATCGGTAA 128687
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Neisseria meningitidis B (NMB). The sequences in AAF21544 and AAF21607 to AAF21613 represent fragments of the NMB genomic sequence, as the sequence was too long to go in a record on its own it was split into 8 sequences which overlap each other at the beginning and end of each sequence by 49980 bp (i.e. the last 49980 bp of AAF21544 is repeated at the beginning of AAF21607, the last 49980 bp of AAF21507 are repeated at the beginning of AAF21608, and so on). AAF21545 to AAF21589 encode the Neisseria proteins given in AAB58550 to AAB58593, and AAF21589 to AAF21606 represent PCR primers which are used in the exemplification of the present invention. The NMB genome and fragments from it have antibacterial activity, and can be used in vaccines and gene therapy. Neisseria nucleic acids, proteins and/or antibodies which binds to the proteins can be used in compositions for treating or preventing infection due to Neisserial bacterial or as a diagnostic reagent for detecting the
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  presence of Neisserial bacteria or of antibodies raised to Neisserial bacteria. Computers, computer memory, computer storage medium or computer databases can be used in a search to identify open reading frames (ORFs) or coding sequences within the NMB genome. The DNA sequences provide further opportunities to find antigenic or immunogenic proteins which are more effective in vaccines than the outer membrane proteins currently
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           319
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Masignani V;
Rappuoli R;
Neisseria meningitidis; Neisseria gonorrheae; immunogenic; vaccine; diagnosis; antigen; detection; infection; gene therapy; antibacterial;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         260 CCGCGAACTCTATGTCAGCCCCGGCTTGTCGCTGCGCACCCCTGCGCTGGTACAGGCCGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  CTTGCCTTTCGCCGTGGTCGATACCCGAGAGAACCCGCCGGAGCTGGCCACCCTGCGTGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Neisseria meningitidis B full length genome sequence and open reading frames are used to detect, treat and prevent Neisserial infections - \,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       200 CCAGIATCCGCAGGTGGAAGTGCGTTGCGGCGAACTCGACGCCGAGTTCCTCTGCTCCGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Sequence 349980 BP; 84410 A; 84863 C; 94187 G; 86520 T; 0 other;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Length 349980;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Peterson J, Tettelin H, Venter JC,
Ratti G, Scarselli M, Scarlato V,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            The present invention describes the full length genome
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     12.4%; Score 180; DB 21;
larity 49.7%; Pred. No. 1.1e-23;
Conservative 0; Mismatches 620;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Claim 7; Appendix A; 692pp; English
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Peterson
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              30-APR-1999; 99US-0132068.
08-OCT-1999; 99WO-US23573.
28-FEB-2000; 2000GB-0004695.
                                                                                                                                                                                                                                                                                                                                                                                                                                                         08-MAR-2000; 2000WO-US05928
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              (GENO-) INST GENOMIC RES.
                                                                                                                                                                                         Neisseria meningitidis
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      οy
```

```
1375 AAGCCGTAGAGG 1386
                                                                                                                             (first entry)
                                                                                                                                                                                                        Neisseria meningitidis.
                                                                                                                                                                                                                                                                                                                                                                     WPI; 2000-318079/27.
                                                                                                                                                                                                                                                                                                               (CHIR ) CHIRON CORP.
                                                                                                                                                                                                                           WO200022430-A2.
                                                                                                                                                                                                                                                               08-OCT-1999;
                                                                                                                             04-DEC-2000
                                                                                                                                                                                                                                                                                    09-OCT-1998;
                                                                                                                                                                                                                                                                                            30-APR-1999;
                                                                                                                                                                                                                                             20-APR-2000
                                                                                                          AAA81490;
                                                                   RESULT 9
  셤
                    ò
                                       g
                                                                                        128927
                                                                                                                                                                                                129228 GATGAAGCGTGCCGGGCGCGAGGTAAAATGGTTTTCGTTGGAACACGAAGCTGATTTCTG 129287
                                                                                                                                                                                                                                                                                                                                                    129455 TCCAAGGCCTGCCGCACCGCGGGAAAAATCGGCGAGAAAAACGGCGTGGTGTTAATCG 129514
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               129563 GTTGCAAAATCCGCTCTTCGTGATTTTGGGCGGCGTGGGTAAAGGCAGGACTCACGC 129622
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          129623 cccreccedarccacregrasscaasscaaasccarerrerresrresresarscec 129682
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      129743 GAGAAGCCGTTCAGACGGCATATGCCCAAGCCGAAGCAGGCGATATTGTGTTGCTCAGCC 129802
                                                                                                                             128987
                                                                                                                                                                                                                                                                                                                                                                                               129335 TTGTCACGCAAGACATTCCGTTGCAAGGTCTGCACAACGCCGGTAACGTCATGGCTGCG 129394
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         129742
                                                                                                                                                                                                                                                                                                                                                                                                                                                        958 TTTCCGGCCTGGCTCATCGCTGCCAGTGGGTACGCGAGCGGCGAGGGCGTGAGCTACTACG 1017
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             1018 ACGATTCCAAGGCCACCAACGTCGCCGCCCTGGCGGCGATCGAGGGGCTGGCCG 1077
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   1078 ACATCGACGCCAAGCTGCTGCTCGCCGGCGGGGGCGCCAAGGGCGCCCGATTTCCATG 1137
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         1138 ACCTGCGCGAGCCGGTCGCGCGTTCTGCCGGGCGGTGGTACTGCTTGGCCGTGACGCCG 1197
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 1254
                                                                    430
                                                                                                          490
                                                                                                                                                538
                                                                                                                                                                                    598
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          CGGCCTGCGCGAGCCTGGACATGTTCAAGAACTTCGAAGAACGCGGACGCCTGTTCGCCA 1374
                                                                                                                                                                                                                                                                                                                                        838 TGCCGGTTGGCGAACTGAAGATCCGTGGCGCCCACAACTATTCCAACGCGCTCGCCGCGC 897
                                                                             GGGCGAAATGGCGGTGGCCGCGGACAAGCGTGTCGCCGTCGGCGGCAACCTCGGCACCCC
                                                                                                                                               --- ACCTGCTGGCCGACGACATCGAGCTGTACGTGTTGGAGCT
                                                                                                                                                                128988 GGTTTTGGAGGCGGAATGGCAGCGCGAAGGCAAAAAGGCGGACGTGTGGGTGTTGGAGCT
                                                                                                                                                                                   GTCGAGCTTCCAGCTGGAAACCTGCGATCGCCTCAACGCCGAGGTGGCGACCGTGAA
                             CGCGAAAGGCGTGCGCATCTCCGGTGACATCGATCTTCGCCCCGCGAGGCGAAGGCCCC
                                                                  GATCGTC------GCCATCACCGGTTCCAACGCGAAGAGCACCGTGACCACCCTGGT
                                                                                                                                                                                                                                                              CCGGATCTTCCGCGGTGCCCGCCAGGTCGTGAATCGCGGCCGATGCCCTGACCCGACC
                                                                                                                                                                                                                                                                                                     GCTG-ATCGCCGATACCGTGCCGTGCTGGTCGTTCGGCCTGAACAAGCCGGACTTCAAGG
                                                                                                                                                                                                                                                                                                                                                                                                                   GGCTGATTGCCCAGGCACTG - - - GGCAACGCGGTACCGCTGGTGCGCGTCGCAACGCTGG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 129683 CGCAAATCCGCCGCGATTTGGACGGCTGCGGCTTGAATATGACCGAGTGCGCCACTTTGG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   1255 ACGAAGCAGTCCGGCAGGCCGCCGAGCTGGCGAAGGCGATGCGGTGCTGTTGTCGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    GGCGCTCG----
                                                                  380
                                                                                                         431
                                                                                                                                                                                                                                                                                                     719
                            320
                                                                                     128868
                                                                                                                                              491
                                                                                                                                                                                   539
                                                                                                                                                                                                                                                              629
                                                                                                                                                                                                                                                                                                                                                                                                                   868
                                                                                                                                                                                                                         599
                                                                                                                                                                                                                                          129108
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               1198
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          1315
                                                                                   g
                                                                                                        à
                                                                                                                         g
                                                                                                                                             ò
                                                                                                                                                               a
                                                                                                                                                                                                    g
         셤
                            ö
                                               合
                                                                 å
                                                                                                                                                                                   ò
                                                                                                                                                                                                                        ð
                                                                                                                                                                                                                                          셤
                                                                                                                                                                                                                                                             ò
                                                                                                                                                                                                                                                                                 셤
                                                                                                                                                                                                                                                                                                   ò
                                                                                                                                                                                                                                                                                                                    g
                                                                                                                                                                                                                                                                                                                                       ð
                                                                                                                                                                                                                                                                                                                                                         g
                                                                                                                                                                                                                                                                                                                                                                                               â
                                                                                                                                                                                                                                                                                                                                                                                                                  ò
                                                                                                                                                                                                                                                                                                                                                                                                                                     g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                          g
                                                                                                                                                                                                                                                                                                                                                                             à
                                                                                                                                                                                                                                                                                                                                                                                                                                                      ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               õ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ò
```

```
The present invention describes methods of obtaining immunogenic broteins from Neisseria genomic sequences. AAA81453 to AAA8214 represent specifically claimed Neisseria meningitidis genomic DNA sequences; AAA81260 to AAA81303 and AAB25620 to AAB25651 represent corresponding proteins; AAA81254 to AAA81259 and AAA81304 to AAA8131 represent PCR primers used in the Neisseria DNA sequences; DNA SAA8132 represent Neisseria meningitidis DNA sequences; and AAA8132 to AAA81452 represent Neisseria meningitidis DNA sequences; and AAA8132 to AAA81452 represent Neisseria meningitidis DNA sequences; and AAA8132 to AAA81452 represent Neisseria meningitidis DNA sequences; and antibodies sequences, which are all used in the exemplification of the present invention. The nucleic acid sequences, protein sequences, and antibodies against them, can be used as a medicament (or in the manufacture of a medicament) for treating, preventing or disgnosing infection due to Neisserial bacteria. For example, some of the identified proteins could be components of vaccines against Meningococcus B; against all pathogenial Neisseriae. Identification of biological probes, particularly organism-specific probes. Attempts to make efficacious Meningococcus B vaccines have failed mainly due to antigen tolerance. Multivalent vaccines have also been tried but none have successfully overcome antigentc variablility. The provision of further, complete sequences may provide an opportunity to identify secreted or surface exposed proteins than may be presumed targets for the immune system and which are not antigenically variable or at least more conserved than
129803 CCGCCTGCGCGAGCTTTGATATGTTCAAAGGCTACGCGCACCGTTCGGAAGTGTTTATCG 129862
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Scarlato V;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Neisseria meningitidis; Neisseria gonorrheae; genome; immunogenic;
antigen; vaccine; diagnosis; infection; antibacterial; identification;
Meningococcus B; MenB; ds.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Sequence 1437668 BP; 344338 A; 353206 C; 385074 G; 355045 T; 5 other;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Isolated nucleotide sequences of Neisseria meningitidis which can be used in the diagnosis and treatment of N. meningitidis infection and other Neisserial infections, for example, N.gonorrhoea -
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     meningitidis B full length genome DNA sequence SEQ ID NO:1068
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Tettelin H, Venter JC;
Ratti G, Scarselli M,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Claim 7; Page 866-1272; 1760pp; English.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          'nχ
                                                                                                                                                                                                                                                                                                                                                                                                                                      AAA81490 standard; DNA; 1437668 BP.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Masignani V, Galeotti C, Mora |
Rappuoli R, Pizza M;
                                                                                                                                                                                          129863 AAGCGTTTAAGG 129874
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   99WO-US23573
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  98US-0103794
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          99US-0132068
```

429742 1314

1254

```
1078 ACATCGACGGCAAGCTGGTGCTGCTCGCCGGCGGAGACGCCAAGGGCGCCGATTTCCATG 1137
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               This invention relates to a method for identifying a nucleotide or polypeptide sequence that may be a drug target, or essential for growth or vlability of an organism. Polynucleotide sequences AAR51947 - AAH52092 represent DNA encoding proteins AAG81096 - AAG81241, Mycobacterium tuberculosis proteins which are potential drug targets. The DNA and protein sequences are used to illustrate the method of the invention. The method involves providing an unknown nucleotide or polypeptide sequences, and comparing it to a number of sequences along with at least one algorithm capable of analysing a functional relationship between nucleotide and polypeptide sequences. The method is useful for
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Identifying nucleotide or polypeptide sequence for use as drug target, involves providing algorithm that analyzes a functional relationship between nucleotide or polypeptide sequences, and comparing the.
                        429563 GTTGCAAAATCCGCTCTTCGTGATTTTGGGCGGCGTGGGTAAAGGGCAGGACTTCACGC
                                                                                            1255 ACGAAGCAGTCCGGCAGGCCGCCGAGCTGGCGGAAGGCGATGCGGTGCTGTTGTCGC
                                                                     1138 ACCTGCGCGAGCCGGTCGCGCGCTTCTGCCGGGCGGTGGTACTGCTTGGCCGTGACGCCG
                                                                                                                                                                                                                                                   429743 GAGAAGCCGTTCAGACGCCATATGCCCAAGCCGAAGCAGGCGATATTGTGTTGTCTCAGCC
                                                                                                                                                                                                                                                                                       CGGCCTGCGCGAGCCTGGACATGTTCAAGAACTTCGAAGAACGCGGACGCCTGTTCGCCA
                                                                                                                                           1198 GGCTGATTGCCCAGGCACTG---GGCAACGCGGTACCGCTGGTGCGCGTCGCAACGCTGG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Drug target; growth; organism viability; characterisation; ds.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Mycobacterium tuberculosis potential drug target gene SEQ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Marcotte EM;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Disclosure; Page 100; 207pp; English.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         BP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  99US-0165086.
99US-0165124.
2000US-0179531.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       AAH52025 standard; DNA; 1461
                                                                                                                                                                                                                                                                                                                                                                                             429863 AAGCGTTTAAGG 429874
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  13-NOV-2000; 2000WO-US31152.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Mycobacterium tuberculosis.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 SH,
                                                                                                                                                                                                                                                                                                                                                            1375 AAGCCGTAGAGG 1386
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            (REGC ) UNIV CALIFORNIA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Rotstein
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  WPI; 2001-329193/34,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      P-PSDB; AAG81174.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          WO200135317-A1.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          01-FEB-2000;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Eisenberg D,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      12-NOV-1999;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         .2-NOV-1999;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               04-SEP-2001
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              17-MAY-2001
                                                                                                                                                                                                                                                                                       1315
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             AAH52025;
                                                                                                                                                                                                                                                                                                                                                                                                                                                     RESULT 10
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         g
                                                                                                                                                                                                                                                                                                                       셤
                                                                                                                                                                                                                                                                                                                                                                                              a
                              g
                                                                     ò
                                                                                                     q
                                                                                                                                         δy
                                                                                                                                                                           q
                                                                                                                                                                                                                 à
                                                                                                                                                                                                                                                                                     ò
                                                                                                                                                                                                                                                                                                                                                            ŏ
                                                                                                                                                                                                                                                                                                                                                                                              428808 GCAAAACGGCGGACGCGTGTTGGGCGACATTGCTGGCGGAAATTGCTGGCGGCACATTGTGAACCGCCG 428867
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        429288 GTTGGAACGCGAGACAGGCCGCCTGAAACAAGGCAATGAAG-------ATTTGA 429334
                                                                                                                      428568 CCTCGTCGCCGGACTCGGCGGTACGGGTATTTCCATGATTGCCTACCTGCGCAAAAACGG 428627
                                                                                                                                                                                            428628 CGCGGAGGTTGCTGCGTATGATGCGGAGCTGAAGCCGGAACGCGTGTCGCAAATCGGTAA 428687
                                                                                                                                                                                                                                                                  428688 GATGTTTGACGGGTTGGTGTTTTACACGGGCCGTCTGAAAGATGCGCTGGACAACGGTTT 428747
                                                                                                                                                                                                                                                                                                                           428928 CGGCTATCTCTGTATCAAGTGCGGGCTGGATACCGTTATCGCGGGCAATATCGGCACGCC 428987
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 428988 GGTTTTGGAGGCGGAATGGCAGCGCAAAGGCAAAAAGGCGGACGTGTGGGTGTTGGAGCT 429047
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            429228 GATGAAGCGTGCCGGGCGCGAGGTAAAATGGTTTTCGTTGGAACACGAAGCTGATTTCTG 429287
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           429335 TTGTCACGCAAGACATTCCGTTGCAAGGTCTGCACAACGCCGCTAACGTCATGGCTGCCG 429394
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               429395 rescrirerereaescearcesrriereseceseaascarrecresaacacercaaaacer 429454
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       129455 TCCAAGGCCTGCCGCACCGCGTGGAAAAATCGGCGAGAAAACGGCGTGGTGTTTATCG 429514
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              429515 ACGACAGCAAAAGGCACGAATGTCGCGCGACTGCCGCGCAT-----TGCCG 429562
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       958 TTTCCGGCCTGGCTCATCGCTGCCAGTGGGTACGCGAGCGGCAGGGGCGTGACTACTACG 1017
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ACGATTCCAAGGCCACCAACGTCGGCGCCCTGGCGGCGATCGAGGGGCTGGGTGCCG 1077
                                                                                                                                                                                                                                                                                                                                                                                                                                                   430
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           490
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   538
                                                                                                                                                                                                                                                                                                                                                                          320 CGCGAAAGGCGTGCGCATCTCCGGTGACATCGATCTTTCGCCCGCGAGGCGAAGGCCCC 379
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      718
                                                                                    140 CTTGCCTTTCGCCGTGGTCGATACCCGAGAACCCGCCGGAGCTGGCCACCCTGCGTGC 199
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          719 GCTG-ATCGCCGATACCGTGCCGTGCTGGTCGTTCGGCCTGAACAAGCCGGACTTCAAGG 777
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  837
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       TGCCGGTTGGCGAACTGAAGATCCGTGGCGCCCACAACTATTCCAACGCGCTCGCCGCGC 897
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               957
                                                                                                                                                                                                                                                                                                    260 CCGCGAACTCTATGTCAGCCCCGGCTTGTCGCTGCGCACCCCTGCGCTGGTACAGGCCGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                 GATCGTC------GCCATCACCGGTTCCAACGCGAAGAGCACCGTGACCACCCTGGT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             491 GGCGCTCG------ACCTGCTGCCGACGACATCGAGCTGTACGTGTTGGAGCT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  659 CCGGATCTTCCGCGGTGCCCGCCAGGTCGTGAATCGCGCCGATGCCCTGACCCGACC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                778 CITICGGCCTGATCGAGGAAGACGGCCAGAAGTGGCTGGCGTTCCAGTTCGACAAGCTGC
                                                                                                                                                                                                                                200 CCAGTATCCGCAGGTGGAAGTGCGTTGCGGCGAACTCGACGCCGAGTTCCTCTGCTCCGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       539 GTCGAGCTTCCAGCTGGAAACCTGCGATCGCCTCAACGCCGAGGTGGCGACCGTGCAAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            599 CGTCAGCGAAGACCATATGGATCGCTACGACGGCATGGCTGACTACCACCTGGCCAAGCA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               898 TGGCGCTGGGCCATGCGGTCGGCCTTCGACGCCATGCTCGGCGCGCTGAAGGCGT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         GGGCGAAATGGCGGTGGCCGCGGACAAGCGTGTCGCCGTCGGCGGCAACCTCGGCACCCC
                                                    Gaps
               Length 1437668;
                                                  50;
                                                    Indels
                                                    620;
               Score 180; DB 21;
Pred. No. 1.1e-23;
                                                  0; Mismatches
             12.4%;
11 Similarity 49.7%;
662; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                 380
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         431
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       838
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            1018
                Query Match
                                 Local
                                Best Loca
Matches
                                                                                                                    셤
                                                                                                                                                          ö
                                                                                                                                                                                            셤
                                                                                                                                                                                                                              à
                                                                                                                                                                                                                                                              g
                                                                                                                                                                                                                                                                                                  δ
                                                                                                                                                                                                                                                                                                                                  g
                                                                                                                                                                                                                                                                                                                                                                        ογ
                                                                                                                                                                                                                                                                                                                                                                                                          g
                                                                                                                                                                                                                                                                                                                                                                                                                                              ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                              g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ογ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          엄
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           g
```

ID 79.

ò 셤 ò 셤 ö g à 셤

```
2416059 CCGCGCAGCTGGCTGGTGACCGCCACCACGAACGCCACGACGTCGATGCTG 2416000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         273 GTCAGCCCCGGCTTGTCGCTGCGCACCCCTGCGCTACAGGCCGCCGCGAAAGGCGTG 332
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            .....CGAGGCG 371
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        372 AAGGCCCCGGATCGTCGCCATCACCGGTTCCAACGCGAAGAGCACCGTGACCACCCTGGTG 431
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Note: The sequence data for this patent did not form part of the printed specification, but was obtained in electronic format directly from USPTO at sequata.uspto.gov/sequence.html?DocID=6294328B1.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            The invention relates to evaluating strain variation within and between different populations of the tuberculosis bacterial pathogen, wycobacterium tuberculosis or related Mycobacterium by determining the nucleotide sequence of the first strain at positions in the complete sequence of the genome that correspond to positions that differ in the nucleotide sequences of M. tuberculosis strains CDC 1551 (AA199683) and H37Rv (AA199682). The method is useful for evaluating strain variation of M. tuberculosis and has valuable application in the fields of
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Sequence 4411529 BP; 758565 A; 1449983 C; 1444602 G; 758379 T; 0 other;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Evaluating strain variation of Mycobacterium tuberculosis, comprises determining the nucleotide sequence of the strain at positions in the genome corresponding to positions where M. tuberculosis strains CDC 1551 and H37Rv differ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    2416119 CCGATCTGGGGTGACGTGGAGTTAGCCTGGCGGCTAGACGCAGCGGGCTGCTACGGACCG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Gaps
                                                                                                                                                                                                                                                                                                     Mycobacterium tuberculosis; strain H37Rv; strain CDC 1551; genome; variation; epidemiology; patient treatment; epidemic monitoring; ds
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Length 4411529;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               39;
                                                                                                                                                                                                                                                                    Mycobacterium tuberculosis strain H37Rv genome SEQ ID NO 1.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       12.0%; Score 173.8; DB 22; Length
llarity 51.7%; Pred. No. 1.4e-22;
Conservative 0; Mismatches 427; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Claim 3; SEQ ID NO 1; 3pp + Sequence Listing; English.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              333 CGCATCTCCGGTGACATCGATCTTCGCCCG------
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ဌ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Venter
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Fraser CM,
                                                                                                                                                    BP.
                                                                                                                                                  AAI99682 standard; DNA; 4411529
                                                                                                                                                                                                                                                                                                                                                                                                                                                                            98US-0103840
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              98US-0103840
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Fleischmann RD, White OR,
                                                                                                                                                                                                                                                                                                                                                               Mycobacterium tuberculosis.
                                                                                                                                                                                                                              (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     (GENO-) INST GENOMIC RES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             WPI; 2001-647261/74.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Best Local Similarity
Matches 499; Conserva
                   1213
                                                       GAGGC 1163
                   CAGGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                          24-JUN-1998;
                                                                                                                                                                                                                                                                                                                                                                                                   US6294328-B1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                24 - JUN - 1998;
                                                                                                                                                                                                                              15-JAN-2002
                                                                                                                                                                                                                                                                                                                                                                                                                                        25-SEP-2001
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            monitoring.
                                                       1159
                 1209
                                                                                                                                                                                      AAI99682;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Query Match
                                                                                                                                 AAI99682,
                                                     g
                                                                                                                                                                        g
                   ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         969 GCTCATCGCTGCCAGTGGGTACGCGAGCGCCAGGGCGTGAGCTACTACGACGATTCCAAG 1028
                                                                                                                                                    ë,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 GCCACCAACGTCGGCGCCCCTGGCGGCGATCGAGGGGCTGCCGACATCGACGGC 1088
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      CCGGTCGCGCGCTTTCTGCCGGGGGGGGTGCTTGCTTGGCCGTGACGCCGGGCTGATTGCC 1208
be
of
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           573
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  634 GGCGGGGTAGCGGTGGCCGGCTGGATGACAGCCGAGCGGCCGCACTGCTGGACGCCTCA 693
                                                                                                                                                                                                                                                                    371
                                                                                                                                                                                                                                                                                                                                                                                                                                                        453
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       611
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               671
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    633
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          731
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  788
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       753
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       908
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               GTCAGCCCCGGCTTGTCGCTGCGCACCCCTGCGCTGGTACAGGCCGCCGCGAAAGGCGTG.332
                                                                                                                                                                                                                          274 CCGATCTGGGGTGACGTGGAGTTAGCCTGGCGGCTAGACGCAGCGGGCTGCTACGGACCG 333
                                                                                                                                                                                                                                                                                                                                           431
                                                                                                                                                                                                                                                                                                                                                             CGGGGAGCTGGCTGGTGACCGGCACCAACGGCAAGACCACCACCACGACGTGGTG 393
                                                                                                                                                                                                                                                                                                                                                                                                                  491
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          GCGCTCGACCTGCTGGCCGACGACATCGAGCTGTACGTGTTGGAGCTGTCGAGCTTCCAG 551
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                GTGCTGGATGTGCTGGACGAGCCGGCCGAGCTGCTGGCGGAGTTGTCCAGTTTCCAG 513
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ATCGAGGAAGACGCCCAGAAGTGGCTGGCGTTCCAGTTCGACAAGCTGCTGCCGGTTGGC 848
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             754 CGCGACGCCCACCTGGTCGATCGCGCCTTCTCCGACGACTTGACGCTGCTGCCGGTCGCG 813
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        909 CATGCGGTCGGCCTGCCGTTCGACGCCATGCTCGGCGCGCTGAAGGCGTTTTCCGGCCTG 968
characterising the function of nucleic acids and polypeptides that may useful as a target for a drug or essential for the growth or viability
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ACCGTGCCGTGCTCG----TTCGGCCTGAACAAGCCGGACTTCAAGGCTTTCGGCCTG
                                                                                                                                                                                                                                                                333 CGCATCTCCGGTGACATCTTTCGCCCG-------CGAGGCG
                                                                                                                                                                                                                                                                                                                                       372 AAGGCCCCGÁTCGTCGCCATCACCGGTTCCAACGCGAAGAGCACCGTGACCACCCTGGTG
                                                                                                                                                                                                                                                                                                                                                                                                                GGCGAAATGGCGGTGGCCGCGGACAAGCGTGTCGCCGTCGGCGGCAACCTCGGCACCCCG
                                                                                                                                                                                                                                                                                                                                                                                                                                        CTGGAAACCTGCGATCGCCTCAACGCCGAGGTGGCGACCGTGCTGAACGTCAGCGAAGAC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     GGTGCCCGCCAGGTCGTGAATCGCGCCGATGCCCTGACCCGACCGCTGATCGCCGAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   874 CGCTCGGTCGGGGTGCCCGCCGGTGCGATGCCGACGCGGTCACGTTTCGAGTGGGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            AAGCTGGTGCTCGCCGGCGGAGACGCCAAGGGCGCCCGATTTCCATGACCTGCGCGAG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      612 CATATGGATCGCTACGACGCCATGGCTGACTACCACCTGGCCAAGCACCGGATCTTCCGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     GAACTGAAGATCCGTGCCGCCCACAACTATTCCAACGCGCTCGCCGCGCTGGCGCTGGGG
                                                                                                                                                  39; Gaps
                                                                                                               DB 22; Length 1461;
                                                                                                             Score 173.8; DB 22; Length
Pred. No. 1.5e-22;
0; Mismatches 427; Indels
                                                                       Sequence 1461 BP; 184 A; 472 C; 558 G; 247 T; 0 other;
                                                                                                             12.0%;
51.7%;
                                                                                                       Query Match
Best Local Similarity 51,74
Watches 499; Conservative
characterising
                                 an organism.
                                                                                                                                                                                      273
                                                                                                                                                                                                                          214
                                                                                                                                                                                                                                                                                                                                                                             334
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              454
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   552
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 574
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      672
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                732
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   849
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 1029
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            1089
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                1039
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      1149
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           1099
                                                                                                                                                                                                                                                                                                                                                                                                                432
```

g

ç

qq

à g à g ò g g à g Qγ g

ò

셤

à 8 ò

ò g ö

ò

2416060

ű,

ŏ

```
g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    g
엄
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     õ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             à
                         2415999 CACGCCATGCTCATCGCCGGTGGCCCGCGCGTGCTGCTGCGCCATATCGGCAGTGCG 2415940
                                                                                                                                                                                                                                                                                                       2415880
                                                                                                                            2415820
                                                                                                                                                                         2415760
                                                                                                                                                                                                                   2415759 GCCGGGGTAGCGGTGGCCGGCTGGATGACAGCCGAGCGGCCGCACTGCTGGACGGCTCA 2415700
                                                                                                                                                                                                                                                                 2415460
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   2415355
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               2415354 AGGTGGTATGGATCGCCGGTGGCCTGCTCAAGGGCGCGTCGCTTCACGCCGAGGTTGCG 2415295
                                                                                                                                                                                                                                                                                                                                                                                                                                                        2415400
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          1148
                                                                                                                                                                                                                                                                                                                                                                                                                                 GCTCATCGCTGCCAGTGGGTACGCGAGCGGCGTGAGCTACTACGACGATTCCAAG 1028
                                                                                                                                                                                                                                                                                                                                                                                                                                                                              GCCACCAACGTCGGCGCCGCCTGGCGGCGATCGAGGGGCTGGGTGCCGACATCGACGGC 1088
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      1149 CCGGTCGCGCGCTTCTGCCGGGCGGTGGTACTGCTTGGCCGTGACGCCGGGCTGATTGCC 1208
          491
                                                       551
                                                                                                     611
                                                                                                                                                   671
                                                                                                                                                                                                                                             788
                                                                                                                                                                                                                                                                                           848
                                                                                                                                                                                                                                                                                                                                         806
                                                                                                                                                                                                                                                                                                                                                     2415519 CGCTCGGGTGCCCGCTCGCTGCTGCCCGACGCGGGTCACGTCGTTTCGACTGGCC
                                                                                                                                                                                                                                                                                                                                                                                                                                               ------CATACCCG
                                                                             2415939 GTGCTGGATGTGCTGGACGAGCCGGCCGAGCTGCTGGCCGTGGAGTTGTCCAG
                                                                                                                          2415879 CTGCACTGGGCGCCGTGCGCCCGAGGCCGGCGCGCGGTGCTCAACATTGCCGAAGAC
                                                                                                                                                             2415819 CACCTGGACTGGCATGCCACGATGGCCGAATACACCGCGGCCGAAGGCCCGGGTGCTGACC
                                                                                                                                                                                                                                                                                           789 ATCGAGGAAGACGGCCAGAAGTGGCTGGCGTTCCAGTTCGACAAGCTGCTGCCGGTTGGC
                                                                                                                                                                                                                                                                                                                                                                                    CATGCGGTCGCCCTGCCGTTCGACGCCATGCTCGGCGCGCTGAAGGCGTTTTCCGGCCTG
          GCCGAAATGGCGGTGGCCGCGGACAAGCGTGTCGCCGTCGGCGGCAACCTCGGCACCCCC
                                                                                                                                                                                                                                           732 ACCGTGCCGTGCTGGTCG---TTCGGCCTGAACAAGCCGGACTTCAAGGCTTTCGGCCTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          AAGCTGGTGCTCGCCGGCGGAGACGCCAAGGGCCCCGATTTCCATGACCTGCGCGAG
                                                                                                    CTGGAAACCTGCGATCGCCTCAACGCCGAGGTGGCGACCGTGCTGAACGTCAGCGAAGAC
                                                                                                                                                 612 CATATGGATCGCTACGACGGCATGGCTGACTACCACCTGGCCAAGCACCGGATCTTCCGC
                                                                                                                                                                                             GGTGCCCGCCAGGTCGTGGTGAATCGCGCCGATGCCCTGACCCGACCGCTGATCGCCGAT
                                                                                                                                                                                                                                                                                                                                      GAACTGAAGATCCGTGGCGCCCACAACTATTCCAACGCGCTCGCCGCGCTGGCGCTGGGC
                                                       GCGCTCGACCTGCTGGCCGACGACATCGAGCTGTACGTGTTGGAGCTGTCGAGCTTCCAG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Mycobacterium tuberculosis; strain H37Rv; strain CDC 1551; genome; variation; epidemiology; patient treatment; epidemic monitoring; ds
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        SEQ ID
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   2415399 GCCACCACCGCACGCCGCGGGCTTCGGTGCTTG---
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Mycobacterium tuberculosis strain H37Rv genome
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    DNA; 4403765 BP.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Mycobacterium tuberculosis.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          2415234 GAGGC 2415230
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    CAGGC 1213
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 AAI99683 standard;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 15-JAN-2002
                                                                                                                                                                                               672
                                                                                                                                                                                                                                                                                                                                       849
                                                                                                                                                                                                                                                                                                                                                                                     606
                                                                                                                                                                                                                                                                                                                                                                                                                                 696
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   1209
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          1089
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          AAI99683;
                                                      492
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            RESULT 12
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     AA199683,
                                                                                                                                                                     g
                                                                                                                                                                                                                   g
                                                                                                                                                                                                                                                                 ద
                                                                                                                                                                                                                                                                                        ò
                                                                                                                                                                                                                                                                                                               ద
                                                                                                                                                                                                                                                                                                                                                            셤
                                                                                                                                                                                                                                                                                                                                                                                                       셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                     셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ò
                                                       à
                                                                           셤
                                                                                                    å
                                                                                                                        g
                                                                                                                                                 å
                                                                                                                                                                                             ŏ
                                                                                                                                                                                                                                          ò
                                                                                                                                                                                                                                                                                                                                     á
                                                                                                                                                                                                                                                                                                                                                                                   ŏ
                                                                                                                                                                                                                                                                                                                                                                                                                                à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                              å
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         å
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ŏ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ð
```

```
2414779
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          2414719
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         2414539
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ä
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          The invention relates to evaluating strain variation within and between different populations of the tuberculosis bacterial pathogen, why cobacterial manual pathogen, may be complete in the foreign strain at positions in the complete sequence of the first strain at positions in the complete sequence of the genome that correspond to positions that differ in the nucleotide sequences of M. tuberculosis strains CDC 1551 (AA199683) and H37Rv (AA199682). The method is useful for evaluating strain variation of M. tuberculosis and has valuable application in the fields of
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            332
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 431
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                611
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             671
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   371
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        491
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     551
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             731
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              other;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 printed
om USPTO
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            273 GICAGCCCCGGCTIGTCGCTGCGCACCCCTGCGTACAGGCCGCCGCGAAAGGCGTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             2414838 eccadroccederrorceccecaarcceeracaeccececececececee
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   2414778 CCGATCTGGGGTGACGTGGAGTTAGCCTGGGGGCTAGACGCAGCGGCTGCTACGGACCG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   2414718 CCGCGCAGCTGGCTGGTGGTGACCGCCACGCCAACGCCAACACCACCACCACGACGTCGATGCTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        2414538 CTGCACTGGGCGCCGTCGCTGCGGCCCGGGCGGGGGCGGGTGCTCAAAGATTGCCGAAGAC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           432 GGCGAAATGGCGGTGGCCGCGGACAAGCGTGTCGCCGTCGGCGGCAACCTCGGCACCCCG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      -- CGAGGCG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              372 AAGGCCCCGATCGTCGCCATCACCGGTTCCAACGCGAAGAGCACCGTGACCACCCTGGTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     GCGCTCGACCTGCTGCCGACGACGACGACGTGTACGTGTTGGAGCTGTCCAG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 2414478 CACCTGGACTGGCATGCCACGATGGCCGAATACACCGCGGGCCAAGGCCCGGGTGCTGACC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          GGTGCCCGCCAGGTCGTGGTGAATCGCGCCGATGCCCTGACCCGACCGCTGATCGCCGAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   CTGGAAACCTGCGATCGCCTCAACGCCGAGGTGGCGACCGTGCTGAACGTCAGCGAAGAC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             CATATGGATCGCTACGACGCCATGGCTGACTACCACCTGGCCAAGCACCGGATCTTCCGC
                                                                                                                                                                                                                                                                                                                                                                                                               determining the nucleotide sequence of the strain at positions in the genome corresponding to positions where M. tuberculosis strains CDC 1551 and H37Rv differ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Note: The sequence data for this patent did not form part of the pr specification, but was obtained in electronic format directly from at seqdata.uspto.gov/sequence.html?DocID=6294328B1.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Sequence 4403765 BP; 757105 A; 1447799 C; 1441301 G; 757371 T; 189
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  DB 22; Length 4403765;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     39;
                                                                                                                                                                                                                                                                                                                                                                                           tuberculosis,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Claim 4; SEQ ID NO 2; 3pp + Sequence Listing; English.
                                                                                                                                                                                                                                                                              ပ္ပ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      CGCATCTCCGGTGACATCGATCTCTTCGCCCG-----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               11.9%; Score 172.2; DB 22;
llarity 51.6%; Pred. No. 2.7e-22;
Conservative 0; Mismatches 428;
                                                                                                                                                                                                                                                                              Venter
                                                                                                                                                                                                                                                                                                                                                                                     Evaluating strain variation of Mycobacterium
                                                                                                                                                                                                                                                                              CM,
                                                                                                                                                                                                                                                                              Fraser
                                                                                                          98US-0103840
                                                                                                                                                                98US-0103840
                                                                                                                                                                                                                                                                              OR,
                                                                                                                                                                                                                       (GENO-) INST GENOMIC RES
                                                                                                                                                                                                                                                                              White
                                                                                                                                                                                                                                                                                                                                 WPI; 2001-647261/74.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Best Local Similarity
Matches 498; Conserv
                                                                                                                                                                                                                                                                              8,
US6294328-B1
                                                                                                          24-JUN-1998;
                                                                                                                                                                24 - JUN-1998:
                                                      25-SEP-2001
                                                                                                                                                                                                                                                                              Fleischmann
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          monitoring
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      333 (
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     492
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   552
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             612
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             672
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Query Match
```

2414418 GGCGGGGTAGCGGTGGCCGGGCTGGATGACAGCCGAGCGGCCGCACTGCTGGACGGCTCA 2414359

```
8888888
                                                                                                                                셤
                                                                                                                                                   à
                                                                                                                                                                 g
                                                                                                                                                                                   ò
                                                                                                                                                                                                   g
                                                                                                                                                                                                                      ò
                                                                                                                                                                                                                                   g
                                                                                                                                                                                                                                                       ò
                                                                                                                                                                                                                                                                       g
                                                                                                                                                                                                                                                                                                       ద
                                                                                                                                                                                                                                                                                                                             ò
                                                                                                                                                                                                                                                                                                                                         g
                                                                                                                                                                                                                                                                                                                                                                            g
                                                                                                                                                                                                                                                                                     à
                                                                                                                                                                                                                                                                                                                                                          ŏ
                                                                                                                                                                                                                                                                                                                                                                                                 à
                                                                                                                                                                                                                                                                                                                                                                                                             g. 8
                                                                                                                                                                                                                                                                                                                                                                                                                                                    g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              음
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                g
                                                    2414239
                                                                                                                                                   2413953 GCGATGGCGTCGCGGCTGGTGCGGTGCTGATCGGCCGGGATCGCGCAGCGGTTGCC 2413894
                                                                                                                                                                                                                                              CCGGTCGCCCCTTCTGCCGGGGGGGGTACTGCTTGGCCGTGACGCCGGGCTGATTGCC 1208
  788
                                                                                                        968
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                present invention relates to proteins from Neisseria gonorrhoeae. disclosed are the nucleic acid molecules encoding the proteins and
                                             2414298 CGCGACGCCCACCTGGTCGATCGCCCTTCTCCGACGACTTGACGCTGCTGCCGGTCGCG
                                                                                                                 ACCGTGCCGTGCTGGTCG---TTCGGCCTGAACAAGCCGGACTTCAAGGCTTTCGGCCTG
               cceccedaderecedentececinecedesecedecedecedesedesecine
                                                                    GAACTGAAGATCCGTGGCGCCCACAACTATTCCAACGGGCTCGCCGCTGGCGCTGGGC
                                                                                    2414238 TCGATACCGGTGCCAGGTCCGGTCGCGTGCTTGACGCCCTGGCCGCGGGGGGGCGCTGGCC
                                                                                                      CATGCGGTCGGCCTGCCGTTCGACGCCATGCTCGGCGCGCTGAAGGCGTTTTCCGGCCTG
                                                                                                                                        GCTCATCGCTGCCAGTGGGTACGCGAGCGGCGAGGCGTGAGCTACTACGACGATTCCAAG
                                                                                                                                                                          AAGCTGGTGCTGCTCGCCGGCGGAGACGGCAAAGGGCGCCGGATTTCCATGACCTGCGCGAG
                                                                                                                                                                                                                       ATCGAGGAAGACGCCCAGAAGTGGCTGCCTTCCAGTTCGACAAGCTGCTGCCGGTTGGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        οĘ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     New protein from Neisseria gonorrheae, useful for the manufacture medicament for treating or preventing N. gonorrheae infection
                                                                                                                                                                                                                                                                                                                                                                                                                     gene;
                                                                                                                                                                                                                                                                                                                                                                                                                 Antibacterial; infection; vaccine; gene therapy;
                                                                                                                                                                                                                                                                                                                                                                                                  ID 7645
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ü
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Monaci
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Disclosure; Page 745-746; 815pp; English
                                                                                                                                                                                                                                                                                                                                                                                                  SEO
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           `
                                                                                                                                                                                                                                                                                                                                                                                                gonorrhoeae nucleotide sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Masignani
                                                                                                                                                                                                                                                                                                                                             BP
                                                                                                                                                                                                                                                                                                                                             standard; DNA; 1335
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      12-FEB-2002; 2002WO-IB02069
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        2001GB-0003424
                                                                                                                                                                                                                                                                                                                                                                               (first entry)
                                                                                                                                                                                                                                                                                                 2413893 GAGGC 2413889
                                                                                                                                                                                                                                                                                                                                                                                                                                    Neisseria gonorrhoeae
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Σ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           WPI; 2003-058415/05.
P-PSDB; ABP80558.
                                                                                                                                                                                                                                                                                CAGGC 1213
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Pizza
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         (CHIR-) CHIRON SPA
                                                                                                                                                                                                                                                                                                                                                                                                                                                    WO200279243-A2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        12-FEB-2001;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Fontana MR,
                                                                                                                                                                                                                                                                                                                                                                              07-MAR-2003
                                                                                                                                                                                                                                                                                                                                                                                                                                                                      10-OCT-2002
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 present
                                  789
                                                                                                      606
                                                                                                                                        696
                                                                                                                                                                          1029
                                                                                                                                                                                                            1089
                                                                                                                                                                                                                                              1149
                                                                                                                                                                                                                                                                                1209
732
                 2414358
                                                                                                                       2414178
                                                                                                                                                         2414118
                                                                                                                                                                                           2414058
                                                                                                                                                                                                                             2414013
                                                                                                                                                                                                                                                                                                                                            ABZ41528
                                                                                                                                                                                                                                                                                                                                                              ABZ41528
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                The p
Also
                                                                                                                                                                                                                                                                                                                                    ABZ41528
ID ABZ4
                                                                                                                                                                                                                                                                                                                             RESULT
à
               8
                                                g
                                                                    õ
                                                                                   g
                                                                                                      à
                                                                                                                    q
                                                                                                                                        à
                                                                                                                                                      <u>엽</u>.
                                                                                                                                                                         à
                                                                                                                                                                                         a
                                                                                                                                                                                                            ð
                                                                                                                                                                                                                           원
                                                                                                                                                                                                                                              à
                                                                                                                                                                                                                                                              셤
                                                                                                                                                                                                                                                                                                ద
                                                                                                                                                                                                                                                                                                                                                     å
                                                                                                                                                                                                                                                                                ò
```

```
ĝ
                                                                                                                                                                                                                                                                                                          139
                                                                                                                                                                                                                                                                                                                                                                                                  140 CTTGCCTTTCGCCGTGGTCGATACCCGAGAACCCGCCGGAGCTGGCCACCCTGCGTGC 199
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     CGATATTCTGGCGCTCCAGTCCCGGCATCGAGCGGCAGCCGGATATCGAGGCGTTCAA 263
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              430
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          383
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   538
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             264 GCAAAACGGCGGCGCGCGTGCTAGGCGACATCGAATTGCTGGCGGACATTGTGAACCGCCG 323
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        GGGCGAAATGGCGGTGGCCGCGGACAAGCGTGTCGCCGTCGGCGGCAACCTCGGCACCCC 490
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       CGGCTATCTCTGCATCAAGTGCGGGCTGGATACCGTCATTGCGGGCAATATCGGTACGCC 443
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 503
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                GICGAGCIICCAGCIGGAAACCIGCGAICGCCICAACGCCGAGGIGGCGACGIGCIGAA 598
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           TICCAGCTICCAACTGGAAAAAACCTGCGCCGACTGCGGCGACGGGGAAAGAAGCTGCGCCGACTGCGGCGACGGTGATGAA 563
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         623
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      683
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  743
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          CGTCAGCGAAGACCATATGGATCGCTACGACGGCATGGCTGACTACCACCTGGCCAAGCA 658
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    GCTG-ATCGCCGATACCGTGCCGTGCTGGTCGTTCGGCCTGAACAAGCCGGACTTCAAGG 777
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 837
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          GTT-------GGAACGCGGACGGCTGTTTAAAACAAGGCAATGAAGATTTGA 790
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           897
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              83
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      antibodies that specifically bind to the proteins. The composition comprising the protein, nucleic acid or antibody is useful for the manufacture of a medicament for treating or preventing N. gonorrhoeae infection, this may be in the form of a vaccine or gene therapy. Sequences given in records ABZ37706-ABZ42016 represent nucleic acid molecules of the invention.
                                                                                                                                                                                                                                                                                                          CCTCGTCGCCGGACTTGGCGGCACGGGTATTTCCATGATTGCCTATCTGCGCAAAAACGG
                                                                                                                                                                                                                                                                                                                                                                                                                                                CGCGGAGGTTGCCGCTTATGATGCGGAGCTGAAAGCCGAGCGCGTGGCGCAAATCGGTAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               CCAGTATCCGCAGGTGGAAGTGCGTTGCGCGAACTCGACGCCGAGTTCCTCTGCTCCGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         CCGCGAACTCTATGTCAGCCCCGGCTTGTCGCTGCGCACCCCTGCGCTGGTACAGGCCGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     GGCGCTCG-----ACCTGCTGCCGACGACATCGAGCTGTACGTGTTGGAGCT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           GATGTTTGACGGGCTGGTGTTTTACACGGGTCGTCTGAAAGATGCGTTGGACAACGGTTT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    CGCGAAAGGCGTGCGCATCTCCGGTGACATCGATCTCTTCGCCCGCGAGGCGAAGGCCCC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              GATCGTC------GCCATCACCGGTTCCAACGCGAAGAGCACCGTGACCACCCTGGT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 GGTTTTGGAGGCAGAATTGCAGCGCGAAGAAAAGGCGGACGTGTGGGTGTTGGAGCT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        684 CATGAAACGGGCAGGGCGTGAAGTGAAACGGTTTTCCTTGGAACACGAAGCCGATTTTTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 CCGGATCTTCCGCGCGCCCGCCAGGTCGTGGTGAATCGCGGCCGATGCCCTGACCCGACC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              TGCCGGTTGGCGAACTGAAGATCCGTGGCGCCCACAACTATTCCAACGCGCGCTCGCCGCGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       TITCTACGCAAGACATCCCGCTGCAAGGTTTGCACAACGCCGCCAACGTTATGGCTGCCG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Length 1335;
                                                                                                                                                                                                                                                           50;
                                                                                                                                                                                                          Score 165.6; DB 25; Lengthered. No. 4.3e-21; O: Mismatches 629; Indels
                                                                                                                                                                 Sequence 1335 BP; 303 A; 341 C; 415 G; 276 T; 0 other;
                                                                                                                                                                                                                                                           ö
                                                                                                                                                                                                               11.4%;
                                                                                                                                                                                                                                                           Conservative
                                                                                                                                                                                                                                     al Similarity
653; Conserv
                                                                                                                                                                                                             Query Match
Best Local S
Matches 653
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               200
                                                                                                                                                                                                                                                                                                                                                   24
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             144
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         260
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     204
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    320
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           431
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       384
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     491
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    444
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                539
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              504
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             599
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           564
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          629
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    719
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               744
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      624
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 778
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              838
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       791
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      868
```

```
2280 TCGCTA 2285
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   620 TCGCTA 625
                                                                                                                                                                                                                                                                                                                                                        1868
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              440
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     AAS89273
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          AAS89273;
                                                                                                                                                                                                                   Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  RESULT 15
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              AAS89273
                                                                                                                                                                                                                                                                                                                 qq
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ax y x
  ò
                                                                                                                                                                                                                                                                                                                                                       셤
                                                                                                                                                                                                                                                                                                                                                                          à
                                                                                                                                                                                                                                                                                                                                                                                             셤
                                                                                                                                                                                                                                                                                                                                                                                                                δ
                                                                                                                                                                                                                                                                                                                                                                                                                                  셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                       à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                         g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     d
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              g
                                                                                                                                                                                                                                                          ŏ
                                                                                                                                                                                                                                                                                                                                     à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ò
                                                                                                                                                                            1198
                                                                                                                                                                                                                                               .078 ACATCGACGCCAAGCTGCTGCTGCTCGCCGGCGAGACGGCAAGGGCGCCGATTTCCATG 1137
                                                                                                                                                                                                                                     CGGCCTGCGCGAGCCTGGACATGTTCAAGAACTTCGAAGAACGCGGACGCCTGTTCGCCA 1374
                                                                                                                               TTTCCGGCCTGGCTCATCGCTGCCAGTGGGTACGCGAGCGGCAGGGCGTGAGCTACTACG
                  TCCAAGGCTTGCCGCACCGTGTGGAAAAATCGGCGAGAAAACGGCGTGGTATTCATCG
                                      <u> ACGATTCCAAGGCCACCAACGTCGGCGCCGCCTGGCGGCGATCGAGGGGCTGGGTGCCG</u>
                                                                                       ACCTGCGCGAGCCGGTCGCGCGTTCTGCCGGCGGTGGTACTGCTTGGCCGTGACGCCG
                                                                                                                                                        GGCTGATTGCCCAGGCACTG---GGCAACGCGGTACCGCTGGTGCGCGTCGCAACGCTGG
                                                                                                                                                                           1139 CGCAAATCCGCCGCGATTTGGACGGCTGCGGCTTGAACCTGACCGACTGCGTCACTTTGG
                                                                                                                                                                                             ACGAAGCAGTCCGGCAGGCCGCCGAGCTGGCCGAAGGCGATGCGGTGCTGTTGTCGC
                                                                                                                                                                                                                                                                                                                                                                                                                         mapping; gene mapping; gene therapy; forensic;
medical imaging; diagnostic; genetic disorder; ss.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  New isolated polynucleotide and encoded polypeptides, useful in diagnostics, forensics, gene mapping, identification of mutations responsible for genetic disorders or other traits and to assess
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         The invention relates to isolated polynucleotide (I) and polypeptide (II) sequences. (I) is useful as hybridisation probes,
                                                                                                                                                                                                                                                                                                                                                                                                       novel human diagnostic protein #25620.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Claim 1; SEQ ID No 25620; 103pp; English.
                                                                                                                                                                                                                                                                                                                                             AAS89816 standard; cDNA; 4942 BP.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    YT;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               30-MAR-2001; 2001WO-US08631
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  2000US-0540217
2000US-0649167
                                                                                                                                                                                                                                                                           AAGCCGTAGAGG 1386
                                                                                                                                                                                                                                                                                             1319 AAGCGTTTAAGG 1330
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Tang
                                                                                                                                                                                                                                                                                                                                                                                   (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Drmanac RT, Liu C,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      WPI; 2001-639362/73.
P-PSDB; ABG25629.
                                                                                                                                                                                                                                                                                                                                                                                                                         Human; chromosome
food supplement; π
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 (HYSE-) HYSEQ INC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                        WO200175067-A2
                                                                                                                                                                                                                                                                                                                                                                                                      DNA encoding
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   31-MAR-2000;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             23-AUG-2000;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 biodiversity
                                                                                                                                                                                                                                                                                                                                                                                                                                                      Homo saptens
                                                                                                                                                                                                                                                                                                                                                                                   13-FEB-2002
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             11-0CT-2001
                 911
                                     1018
                                                                                                                  1138
                                                                                                                                                       1198
                                                                                                                                                                                                                                    1315
                                                                                                                                                                                                                                                                          1375
                                                                                                                                                                                                                                                                                                                                                                AAS89816;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       The
                                                                                                                                                                                                                                                                                                                         RESULT 14
AAS89816
                                                                                                                                                                                                                ద
                                                                                                                                                                                                                                                                                                                                                       셤
                                                                                             셤
                                                                                                                 ò
                                                                                                                                  d
                                                                                                                                                      ŏ
                                                                                                                                                                         g
                                                                                                                                                                                             ò
                                                                                                                                                                                                                                    ð
                                                                                                                                                                                                                                                       g
                                                                                                                                                                                                                                                                          ð
                                                                                                                                                                                                                                                                                            8
                                     ò
                                                        a
                                                                          δ
```

```
polymerase chain reaction (PCR) primers, oligomers, and for chromosome and gene mapping, and in recombinant production of (II). The polymucleotides are also used in diagnostics as expressed sequence tags. for identifying expressed genes. (I) is useful in gene therapy techniques (I) is useful in gene therapy techniques to restore normal activity of (II) to to treat disease states involving (II) is useful for generating antibodies against it, detecting or quantitating a polypeptide in tissue, as molecular weight markers and as a food supplement. (II) and its binding partners are useful in medical casorders involving aberrant protein expression or biological activity. The polypeptide and polymucleotide sequences have applications in capponsible for genetic disorders or other traits to assess biodiversity and to produce other types of data and products dependent on DNA and to produce other types of data and products dependent on DNA and amino acid sequences AsS64197-AAS94564 represent novel human consideration to the sequence data for this patent did not appear in the printed security in the print
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1919
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              2039
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               2219
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               1808
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        1867
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           1979
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  2099
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           2220 CACCTCCAGCTTACAGGCGGTAGCAGCGACCATTCTGAACGTGACTGAAGATCATATGGA 2279
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     139
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    199
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             259
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           319
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               379
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   439
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ------AAGCCGTAGAACGCCACACGGGCAGTCTGAATGATGATGGCTGATGGCGGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      GGGGGTGGCCGCGGACAAGCGTGTCGCCGTCGGCGCAACCTCGGCACCCCGGCGCTCGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          2160 GCTACTGGATGATGAGTGTGAACTGTACGTGCTGGAACTGTCGAGGTTCCAGCTGGAAAC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         560 CTGCGATCGCCTCAACGCCGAGGTGGCGACCTGCTGAACGTCAGCGAAGACCATATGGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         140 CTTGCCTTTCGCCGTGGTCGATACCCGAGAGAACCCGCCGGAGCTGGCCACCCTGCGTGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          320 CGCGAAAGGCGTGCGCATCTCCGGTGACATCTTTCGCCCGCGAGGCGAAGGCCCC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        380 GATCGTCGCCATCACCGGTTCCAACGCGAAGAGCACCGTGACCACCCTGGTGGGGCGAAAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                500 CCTGCTGGCCGACGACATCGAGCTGTACGTGTTGGAGCTGTCGAGCTTCCAGCTGGAAAC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        1809 TGTGACGCGCGCGTTATGGATACGCGTATGACACCGCCTGGCCTGGATAAATTACCCG-
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           260 CCGCGAACTCTATGTCAGCCCCGGCTTGTCGCTGCGCACCCCTGCGCTGGTACAGGCCGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             200 CCAGTATCCGCAGGTGGAAGTGCGTTGCGGCGAACTCGACGCCGAGTTCCTCTGCTCCGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Query Match 10.9%; Score 158; DB 23; Length 4942; Best Local Similarity 57.1%; Pred. No. 1e-19; Matches 312; Conservative 0; Mismatches 225; Indels 9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Sequence 4942 BP; 1109 A; 1296 C; 1387 G; 1150 T; 0 other;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ftp.wipo.int/pub/published_pct_sequences
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               standard; cDNA; 4944 BP.
```

us-09-701-229-1.rng

```
The invention relates to isolated polynucleotide (I) and polypeptide (II) sequences. (I) is useful as hybridisation probes, conjuperase chain reaction (PCR) primers, oligomers, and for chromosome and gene mapping, and in recombinant production of (II). The cand gene mapping, and in recombinant production of (II). The polyucleotides are also used in diagnostics as expressed sequence tags for identifying expressed genes. (I) is useful in gene therapy techniques or restore normal activity of (II) is useful in gene therapy techniques (II). (II) is useful for generating antibodies against it, detecting or quantitating a polypeptide in tissue, as molecular weight markers and as companied supplement. (II) and its binding partners are useful in medical imaging of sites expressing (II). (I) and (II) are useful in medical casorders involving aberrant protein expression or biological activity. Companied and polypucleotide sequences have applications in diagnostics, forensics, gene mapping, identification of mutations casponsible for genetic disorders or other traits to assess biodiversity and to produce other types of data and products dependent on DNA and amino acid sequences. Askétlapt?Ask59454 represent novel human clidianostic coding sequences of the invention format directly from WIPO
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      -----AAGCCGTAGAACGCCACACGGGCAGTCTGAATGATGAATGCTGATGGCGGC 1919
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         140 CITGCCTTTCGCCGTGGTCGATACCCGAGAACCCGCCGGAGCTGGCCACCCTGCGTGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           200 CCAGTATCCGCAGGTGGAAGTGCGTTGCGGCGAACTCGACGCCGAGTTCCTCTGCTCCGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Gaps
                                                                                                                                            Human; chromosome mapping; gene mapping; gene therapy; forensic; food supplement; medical imaging; diagnostic; genetic disorder; ss.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         New isolated polynucleotide and encoded polypeptides, useful in diagnostics, forensics, gene mapping, identification of mutations responsible for genetic disorders or other traits and to assess
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  6
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Score 158; DB 23; Length 4944;
Pred. No. 1e-19;
0; Mismatches 225; Indels 9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Sequence 4944 BP; 1110 A; 1302 C; 1383 G; 1149 T; 0 other;
                                                                         DNA encoding novel human diagnostic protein #25077.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            at ftp.wipo.int/pub/published_pct_sequences
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Claim 1; SEQ ID No 25077; 103pp; English.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Tang YT;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Query Match . 10.9%;
Best Local Similarity 57.1%;
Matches 312; Conservative (
                                                                                                                                                                                                                                                                                                                                                                                                                                                               30-MAR-2001; 2001WO-US08631
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     31-MAR-2000; 2000US-0540217.
(first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Drmanac RT, Liu C,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     WPI; 2001-639362/73
                                                                                                                                        Human; chromosome
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                (HYSE-) HYSEQ INC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          P-PSDB; ABG25086
                                                                                                                                                                                                                                                                                                                      WO200175067-A2.
                                                                                                                                                                                                                                                   Homo sapiens
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        biodiversity
13-FEB-2002
                                                                                                                                                                                                                                                                                                                                                                                            11-OCT-2001.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     1868
NAMES OF COLORD 
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     g
```

260 CCGCGAACTCTATGTCAGCCCCGGCTTGTCGCTGCGCACCCCTGCTGGTACAGGCCGC 319

å

```
2099
                                                                                                                                                                                                       2219
2220 CACCTCCAGCTTACAGGCGGTAGCAGCGACCATTCTGAACGTGAACATCATAATGGA 2279
                                                                                  439
                                                                                                                                440 GGCGGTGGCCGCGGGACAAGCGTGTCGCCGTCGGCGAACCTCGGCACCCCGGCGCGTCGA 499
                                                                                                                                                                                                                                619
                                                                                               CGCGAAAGGCGTGCGCATCTCCGGTGACATCTTCGCCCGCGGAGGCGAAGGCCCC
                                                                                  GATCGTCGCCATCACCGGTTCCAACGCGAAGACCACCGTGACCACCCTGGTGGGGGGAAAT
                                                                                                                                                                               500 CCTGCTGGCCGACGACATCGAGCTGTACGTGTGGAGCTGTCGAGCTTCCAGCTGGAAAC
                                                                                                                                                                                                                              CTGCGATCGCCTCAACGCCGAGGTGGCGACCGTGAACGTCAGCGAAGACCATATGGA
                                                                                                                                                                                                                                                                                                                                         Search completed: August 14, 2003, 01:55:30
                                                                                                                                                                                                                                                                                              2280 TCGCTA 2285
                                                                                                                                                                                                                                                                                                                                                      Job time : 443 secs
                                                                                  380
                                                                                                                                                                                                                                260
                                                                                                                                                                                                                                                                              620
                                  320
                                                                                                                                                                                                       g
                                  ò
                                                        g
                                                                               ò
                                                                                                       a
                                                                                                                                ò
                                                                                                                                                       엄
                                                                                                                                                                               ò
                                                                                                                                                                                                                                ð
                                                                                                                                                                                                                                                      g
                                                                                                                                                                                                                                                                               ö
```

```
(without alignments)
2149.344 Million cell updates/sec
                                                                                                                                                                                                          448
                                                                                                                                                                                      2260
1 MSLIASDHFRIVVGLGKSGM.....MFKNFEERGRLFAKAVEELA
                                                                                                   92 Seconds
GenCore version 5.1.6
Copyright (c) 1993 - 2003 Compugen Ltd.
                                                                                                     ; Search time

    nucleic search, using frame_plus_p2n model

                                                                                                                                                                                                                                                                                                                                                                                 of hits satisfying chosen parameters:
                                                                                                                                                                                                                                                                                                                                               569978 seqs, 220691566 residues
                                                                                                                                                                                                                                                           0.5
0.5
0.7
                                                                                                   August 14, 2003, 07:06:25
                                                                                                                                                                                                                                                        Xgapop 10.0 , Xgapext
Ygapop 10.0 , Ygapext
Fgapop 6.0 , Fgapext
Delop 6.0 , Delext
                                                                                                                                                                                                                                                                                                                                                                                                                  Minimum DB seq length: 25
Maximum DB seq length: 2000000000
                                                                                                                                                                      US-09-701-229-2
                                                                                                                                                                                                                                           BLOSUM62
                                                                                                                                                                                          Perfect score:
                                                                                                                                                                                                                                           Scoring table:
                                                                                                                                                                                                                                                                                                                                                                                 Total number
                                                                   OM protein
                                                                                                                                                                                                          Sequence:
                                                                                                                                                                                                                                                                                                                                                Searched:
                                                                                                   Run on:
                                                                                                                                                                        Title:
```

Post-processing: Minimum Match 0% Maximum Match 100% Listing first 45 summaries

# Database

1: /cgn2\_6/ptcdata/1/ina/5A\_COMB.seq:\*
2: /cgn2\_6/ptcdata/1/ina/5B\_COMB.seq:\*
3: /cgn2\_6/ptcdata/1/ina/6A\_COMB.seq:\*
5: /cgn2\_6/ptcdata/1/ina/6B\_COMB.seq:\*
5: /cgn2\_6/ptcdata/1/ina/PCTUS\_COMB.seq:\*
6: /cgn2\_6/ptcdata/1/ina/PcTUS\_COMB.seq:\* Issued\_Patents\_NA:\*

Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

### SUMMARIES

	Description	Sequence 7702, Ap	Sequence 7861, Ap	Sequence 1282, Ap	Sequence 7787, Ap	Sequence 1, Appli	Sequence 1, Appli	Sequence 7928, Ap	Sequence 1, Appli	Sequence 1, Appli	Sequence 195, App	Sequence 7552, Ap	Sequence 1, Appli
	ΩI	US-09-252-991A-7702	US-09-252-991A-7861	US-09-328-352-1282	US-09-252-991A-7787	US-09-557-884-1	US-09-643-990A-1	US-09-252-991A-7928	US-08-934-481-1	US-09-290-602-1	US-08-961-527-195	US-09-252-991A-7552	US-08-665-435A-1
	g :	4	4	4	4	4	4	4	~	7	4	4	1
	Match Length DB	1371	1401	1416	267	1830121	1830121	564	2193	2193	6693	360	1350
% Query	Match	100.0		50.8		38.9	38.9	27.7	26.7	26.7	26.3	26.2	26.0
	Score	2260	2252	1148.5	951	879	879	626	603.5	603.5	594.5	591	586.5
ult	. Š	-	7	m	4	Ŋ	9	7	œ	σ	10	11	13
Result			O		O			O			U		

Sequence 3, Appli Sequence 3, Appli Sequence 1, Appli Sequence 1, Appli	12,7		Sequence 1, Appli Sequence 1001, Ap		Sequence 86, Appl	86,	86,	1,	881,	3, 2	'n,		8, A	356	7701	7862		897,	7625,	Sequence 7927, Ap		Sequence 78, Appl	1894	Sequence 3, Appli	1,
-86	US-09-103-840A-2 US-09-107-532A-1574	US-08-961-083-109 US-09-536-784-109	US-09-530~836-1 US-09-134-001C-1001	US-09-147-928-1	US-08-714-918-86	US-09-265-315-86	US-09-266-417-86	US-09-198-452A-1	US-09-221-017B-881	US-08-934-481-3	US-09-290-602-3	US-09-252-991A-7624	US-09-230-380-8	US-08-961-527-356	US-09-252-991A-7701	US-09-252-991A-7862	-08-732-	US-09-328-352-897	US-09-252-991A-7625	٩	US-09-328-352-2140	336-165A-7	US-09-328-352-1894	US-09-147-928-3	US-09-144-918-1
422	. 4 و	w 4	4 4	٣	m m	m	٣	4	4	~	4	4	٣	4	4	4	7	4	4	4	4	4	4	m	m
1350 1350 1353 4411529	4403765 1368	1003	1372	1242	2423	2423	2423	1230025	2402	801	801	1359	2393	843	1515	1215	1360	1479	1542	1701	1503	717	1452	536	1400
	22.8		20.8 20.8	18.6	17.5	17.5	17.5		17.2	16.8	16.8	14.2	14.2	12.9	10.6	9.3	9.5	8.7	8.7	8.7	8.6	8.1	8.1	7.7	7.5
586.5 586.5 586.5 525	⊣ ∵	4 4 4 9 3 8 8	470 469	421	395 395	395	395	391.5	389.5	379	379	321	321	292	240	210.5	207	195.5	195.5	195.5	195		182.5	173	170.5
c 114		19 20	21 22	23	24 25	<u>26</u>	27	28	29	30	31	32	33	c 34	35	c 36	37	38	39	C 40	41	42	. 43	44	45

# ALIGNMENTS

```
GENERAL INFORMATION:
APPLICANT: Marc J. Rubenfield et al.
APPLICANT: Marc J. Rubenfield et al.
TITLE OF INVENTION: NUCLEIC ACID AND AMINO ACID SEQUENCES RELATING TO PSEUDOMONAS TITLE OF INVENTION: AEBUGINOSA FOR DIAGNOSTICS AND THERAPEUTICS
FILE REFERENCE: 107196.136
CURRENT APPLICATION NUMBER: US/09/252,991A
CURRENT FILING DATE: 1998-02-18
PRIOR APPLICATION NUMBER: US 60/074,788
PRIOR APPLICATION NUMBER: US 60/094,190
PRIOR FILING DATE: 1998-07-27
NUMBER OF SEQ ID NOS: 33142
SEQ ID NO 7702
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              448
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          US-09-701-229-2 (1-448) x US-09-252-991A-7702 (1-1371)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Conservative:
Mismatches:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Matches:
                                                                                                                                                                                                                                                                                                                                                                                                                                                  Length:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Indels:
                Sequence 7702, Application US/09252991A
Patent No. 6551795
                                                                                                                                                                                                                                                                                                                                                                ORGANISM: Pseudomonas aeruginosa
US-09-252-991A-7702
                                                                                                                                                                                                                                                                                                                                                                                                                                                3.5e-241, 2260.00, 100.00% 100.00% 100.00%
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Percent Similarity:
Best Local Similarity:
Query Match:
US-09-252-991A-7702
                                                                                                                                                                                                                                                                                                                                                                                                                               Alignment Scores:
                                                                                                                                                                                                                                                                                                                          1371
                                                                                                                                                                                                                                                                                                                                               TYPE: DNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                Pred. No.:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     움
```

~

	RESULT 2 US-09-252-991A-7861/C  Sequence 7861, Application US/09252991A  Sequence 7861, Application US/09252991A  Sequence 7861, Application US/09252991A  Sequence 7861, Application US/09252991A  SEQUENCAL INFORMATION:  APPLICANT: Marc J. Rubenfield et al.  TITLE OF INVENTION: NUCLEIC ACID AND AMINO ACID SEQUENCES RELATING TO PSEUDO  TITLE OF INVENTION: AENGGINOSA FOR DIAGNOSTICS AND THERAPEUTICS  FILE REFERENCE: 107196.136  CURRENT FILING DATE: 1999-02-18  PRIOR APPLICATION NUMBER: US 60/074,788  PRIOR PELING DATE: 1998-02-18  PRIOR PELING DATE: 1998-02-18  PRIOR PELING DATE: 1998-02-18  SEQ ID NOS: 33142  SEQ ID NOS: 33142  SEQ ID NOS: 33142  CRENGTH: H401  TYPE: DNA  CRENGTH: APSENDANCAN: PSEUDOMONOAS BENDANCAN: PSEUDOMONOAS BENDANCAN: PSEUDOMONOAS BENDANCAN: PSEUDOMONOAS BENDANCAN: PSEUDOMONOAS BENDANCAN: PSEUDOMONOAS BENDANCAN: PSEUDOMONOAS BENUGINOSA	January   Janu	21   SerLeuvalArgTyrLeuAlaArgArgGIyLeuProPheAlaValValAspThrArgGIu
SerLeuValargTyrLeuAlaArgArgGlyLeuProPheAlaValValAspThrArgGlu	101 AspLeuPheAlaArgGluAlaLysAlaProlleValAlaIleThrGlySerAsnAlaLys 120 101 AspLeuPheAlaArgGluAlaLysAlaProlleValAlaIleThrGlySerAsnAlaLys 120 11111111111111111111111111111111111	1ValAsnArgAlaAe	11111111111111111111111111111111111111
6 6 6 6 6 6	8 6 8 6 8 6 8 6 8	64 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6	4 3 4 3 4 3 4 3 4 3 4 3 4 3 4 3 4 3 4 3

```
d et al.
ACID AND AMINO ACID SEQUENCES RELATING TO PSEUDOMONAS
SA FOR DIAGNOSTICS AND THERAPEUTICS
AspHisPhearglleValValGlyLeuGlyLysSerGlyMet 20
                                                                                                                                                                                                                                                                                                                                                                                       JeucysSerAlaArgGluLeuTyrValSerProGlyLeuSer 80
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                hrLeuArgAlaGlnTyrProGlnValGluValArgCysGly 60
                                                                                                                                                                                                                                                                                                                                            252-991A-7861 (1-1401)
                                                                                                                                                                                                                                                                                        Length:
Matches:
Conservative:
Mismatches:
Indels:
                                                                                                                                                                                S/09/252,991A
                                                                                                                                                                                         2-18
5-60/074,788
18
5-60/094,190
27
                                                                                                                                                                                                                                                                                                                              Gaps:
                                                                                         LeuAla 448
                                                                                                                             09252991A
                                                                                                                                                                                                                                                             nosa
```

```
LysAlaPheGlyLeuIleGluGlu---AspGlyGlnLysTrpLeuAlaPheGlnPheAsp
                                                                                                                                                                                                                                                                                                                       TTAATACAACGTGGTGGATTAAAAGTTGTAGCAGGCTTGGGAATATCAGGTGTTTCTGCT
                                                                                                                                                                                                                     ||| :::||| :::||| CTAAAGTTGCTGTAAAGTTGCTGTAAAGTTCCCGCCCCACACCT
                                                                                                                                                                                                                                                                            CTTGATCAAGAATTATTATACAAGCAGAAGAGATTATTATAAGCCCAGGCCTTGCACCA
                                                                                                                                                                                                                                                                                                            ArgThrProAlaLeuValGlnAlaAlaAlaLysGlyValArgIleSerGlyAspIleAsp
                                                                                                                                                                                                                                                                                                                                                      GlyAsnLeuGlyThrProAlaLeuAspLeuLeuAlaAspAspIleGluLeuTyrValLeu
                                                                                                                                                                                                                                                                                                                                                                                                                                              GluLeuSerSerPheGlnLeuGluThrCysAspArgLeuAsnAlaGluValAlaThrVal
                                                                                                                                                                                                                                                                                                                                                                                                                                                       LysHisArgIlePheArgGlyAlaArgGlnValValValAsnArgAlaAspAlaLeuThr
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         LeulleAlaSerAspHisPheArglleValValGlyLeuGlyLysSerGlyMetSerLeu
                                                                                                                                                                                                                                            ProGluLeuAlaThrLeuArgAlaGlnTyrProGln---ValGluValArgCysGlyGlu
                                                                                                                                                                                                                                                           CCCGGA-------CACGATCAGATTCCGGCTGGTGTTAAAACCAGTTTTGGTCAG
                                                                                                                                                                                                                                                                                                                                             LeuPheAlaArgGluAlaLysAlaProIleValAlaIleThrGlySerAsnAlaLysSer
                                                                                                                                                                                                                                                                                                                                                                              ThrValThrThrLeuValGlyGluMetAlaValAlaAlaAspLysArgValAlaValGly
                                                                                                                                                                                                                                                                                                                                                                                                                        LeuAsnValSerGluAspHisMetAspArgTyrAspGlyMetAlaAspTyrHisLeuAla
                                                                                                                                                                                                            ValArgTyrLeuAlaArgArgGlyLeuProPheAlaValValAspThrArgGluAsnPro
  THERAPEUTICS
                                                                                                  1416
240
59
142
4
                                                                                                                 Conservative:
Mismatches:
Indels:
 AND
                                                                                                                                                           US-09-701-229-2 (1-448) x US-09-328-352-1282 (1-1416)
TITLE OF INVENTION: BAUMANNII FOR DIAGNOSTICS FILE REFERENCE: GTC99-03PA CURRENT APPLICATION NUMBER: US/09/328,352 CURRENT FILING DATE: 1999-06-04 NUMBER OF SEQ ID NOS: 8252 SEQ ID NO 1282
                                                                                                  Length:
Matches:
                                                         ; TYPE: DNA
; ORGANISM: Acinetobacter baumannii
US-09-328-352-1282
                                                                                                  8.45e-118
1148.50
66.44%
53.33%
50.82%
                                                                                                                Percent Similarity:
Best Local Similarity:
Query Match:
                                                                                          Alignment Scores:
Pred. No.:
                                                  1416
                                                                                                                                                                                          73
                                                                                                                                                                                                            23
                                                                                                                                                                                                                                           43
                                                                                                                                                                                                                                                            193
                                                                                                                                                                                                                                                                                           241
                                                                                                                                                                                                                                                                                                                             301
                                                                                                                                                                                                                                                                                                                                                             361
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  222
                                                                                                                                                                                                                           133
                                                                                                                                                                                                                                                                            62
                                                                                                                                                                                                                                                                                                            82
                                                                                                                                                                                                                                                                                                                                            102
                                                                                                                                                                                                                                                                                                                                                                              122
                                                                                                                                                                                                                                                                                                                                                                                             421
                                                                                                                                                                                                                                                                                                                                                                                                             142
                                                                                                                                                                                                                                                                                                                                                                                                                              481
                                                                                                                                                                                                                                                                                                                                                                                                                                               162
                                                                                                                                                                                                                                                                                                                                                                                                                                                              541
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                182
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                601
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 202
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 199
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  721
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     242
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    781
                                                  LENGTH:
                                                                                                                                                                                         g
                                                                                                                                                                           ð
                                                                                                                                                                                                           ŏ
                                                                                                                                                                                                                          g
                                                                                                                                                                                                                                          ά
                                                                                                                                                                                                                                                         QQ
                                                                                                                                                                                                                                                                            à
                                                                                                                                                                                                                                                                                          qq
                                                                                                                                                                                                                                                                                                           δy
                                                                                                                                                                                                                                                                                                                        a
                                                                                                                                                                                                                                                                                                                                            ò
                                                                                                                                                                                                                                                                                                                                                          QQ
                                                                                                                                                                                                                                                                                                                                                                             δ
                                                                                                                                                                                                                                                                                                                                                                                            g
                                                                                                                                                                                                                                                                                                                                                                                                         Qγ
                                                                                                                                                                                                                                                                                                                                                                                                                           g
                                                                                                                                                                                                                                                                                                                                                                                                                                               δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                           5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                οy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  δy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         GENERAL INFORMATION:
APPLICANT: Gary L. Breton et al.
TITLE OF INVENTION: NUCLEIC ACID AND AMINO ACID SEQUENCES RELATING TO ACINETOBACTER
                                                                                                                                                                                                                                                                                                                    340
                                                                                                                                                                                                                                                                                                                                                     360
                                                                                                                                                                                                                                                                                                                                                                                                                      400
                                                 180
                                                                                  200
                                                                                                                 220
                                                                                                                                  619
                                                                                                                                                  240
                                                                                                                                                                  619
                                                                                                                                                                                   260
                                                                                                                                                                                                   559
                                                                                                                                                                                                                   280
                                                                                                                                                                                                                                  499
                                                                                                                                                                                                                                                    300
                                                                                                                                                                                                                                                                   439
                                                                                                                                                                                                                                                                                   320
                                                                                                                                                                                                                                                                                                   379
                                                                                                                                                                                                                                                                                                                                                                     259
                                                                                                                                                                                                                                                                                                                                                                                      380
                                                                                                                                                                                                                                                                                                                                                                                                     199
                                                                                                                                                                                                                                                                                                                                                                                                                                                      420
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       440
                                                                                                                                                                                                                                                                                                                                                                                                                                                                      79
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       13
                                                                                AGCACCGTGACCCTGGTGGCGGAAATGGCGGTGGCCGCGGACAAGCGTGTCGCCGTC
                GlyGlyAsnLeuGlyThrProAlaLeuAspLeuLeuAlaAspAspIleGluLeuTyrVal
                        AlaLysHisArgIlePheArgGlyAlaArgGlnValValValAsnArgAlaAspAlaLeu
                                                                                                                          ThrArgProLeuIleAlaAspThrValProCysTrpSerPheGlyLeuAsnLysProAsp
                                                                                                                                                          LysAlaPheSerGlyLeuAlaHisArgCysGlnTrpValArgGluArgGlnGlyValSer
                                                                                                                                                                                                                                                                                            TyrTyrAspAspSerLysAlaThrAsnValGlyAlaAlaLeuAlaAlaIleGluGlyLeu
                                                                                                                                                                                                                                                                                                                           LeuAspGluAlaValArgGlnAlaAlaGluLeuAlaArgGluGlyAspAlaValLeuLeu
                                                                                                                                                                                                                                                                                                                                                                                                                                                             Sequence 1282, Application US/09328352
Patent No. 6562958
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        AlaLysAlaValGluGlu 446
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  GCCAAAGCCGTAGAGGAG 1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         RESULT 3
US-09-328-352-1282
                141
                                918
                                                               828
                                                                                                 198
                                                                                                                                738
                                                                                                                                                                                  241
                                                                                                                                                                                                  618
                                                                                                                                                                                                                                  558
                                                                                                                                                                                                                                                  281
                                                                                                                                                                                                                                                                   498
                                                                                                                                                                                                                                                                                   301
                                                                                                                                                                                                                                                                                                  438
                                                                                                                                                                                                                                                                                                                   321
                                                                                                                                                                                                                                                                                                                                                    341
                                                                                                                                                                                                                                                                                                                                                                                     361
                                                                                                                                                                                                                                                                                                                                                                                                    258
                                                                                                                                                                                                                                                                                                                                                                                                                     381
                                                                                                                                                                                                                                                                                                                                                                                                                                     198
                                                                                                                                                                                                                                                                                                                                                                                                                                                      401
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       421
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       78
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        441
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         18
                                                 161
                                                                                181
                                                                                                                 201
                                                                                                                                                 221
                                                                                                                                                                                                                   261
                                                                                                                                                                                                                                                                                                                              a
                                                                                                                                                                                                                                                                                                                                                                 a
                                                                                                                                                                                                                                                                                                                                                                                               a
               ò
                              g
                                                ò
                                                            g
                                                                                9
6
                                                                                                          δŽ
                                                                                                                            셤
                                                                                                                                                ò
                                                                                                                                                            g
                                                                                                                                                                               õ
                                                                                                                                                                                              셤
                                                                                                                                                                                                                 à
                                                                                                                                                                                                                            셤
                                                                                                                                                                                                                                                  ò
                                                                                                                                                                                                                                                              g
                                                                                                                                                                                                                                                                            à
                                                                                                                                                                                                                                                                                               g
                                                                                                                                                                                                                                                                                                                  ŏ
                                                                                                                                                                                                                                                                                                                                                 δ
                                                                                                                                                                                                                                                                                                                                                                                     à
                                                                                                                                                                                                                                                                                                                                                                                                                    ò
                                                                                                                                                                                                                                                                                                                                                                                                                                   g
                                                                                                                                                                                                                                                                                                                                                                                                                                                  ŏ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ద
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      g
```

22

192

42

240

61

300 101 360 121 420 141 480 161 540 181 9 201 999 221 720 241

81

```
Genome, Fragments
                                                                                                                                  AlaLeuAlaLeuGlyHisAlaValGlyLeuProPheAspAlaMetLeuGlyAlaLeuLys
                                                                                                                                                                               AlaPheSerGlyLeuAlaHisArgCysGlnTrpValArgGluArgGlnGlyValSerTyr
                                                                                                                                                                                                 145 GCGGGCTGATTGCCCAGGCACTGGCAACGCGGTACCGCTGGTGCGCTGGTGCGTAACGCTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    LeuLeuProValGlyGluLeuLysIleArgGlyAlaHisAsnTyrSerAsnAlaLeuAla
                                                                                                                                                                                                                                                TyraspaspSerLysalaThrasnValGlyalaAlaLeualaAlaIleGluGlyLeuGly
                                                                                                                                                                                                                                                                                                                                                                                                                                    382 AlaGlyLeuIleAlaGlnAlaLeuGlyAsnAlaValProLeuValArgValAlaThrLeu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   402 AspGluAlaValArgGlnAlaAlaGluLeuAlaArgGluGlyAspAlaValLeuLeuSer
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Rd
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Sequence 1, Application US/09557884
Patent No. 6506581
GENERAL INTERMATION:
APPLICANT: Fleischmann et al.
APPLICANT: Fleischmann et al.
TITLE OF INVENTION: The Nacleotide sequence of
TITLE OF INVENTION: The Nacleotide influenzae
Thereof, and Uses Thereof
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                NUMBER OF SEQUENCES: 1
CORRESPONDENCE ADDRESS:
ADDRESSEE: Human Genome Sciences, Inc.
STREET: 9410 Key West Avenue
CITY: Rockville
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             APPLICATION NUMBER: US/09/557,884
FILING DATE: 25-Apr-2000
CLASSIFICATION: <UNKNOWN>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               COUNTRY: USA
CONPUTER: DESSO
COMPUTER READABLE FORM:
MEDIUM TYPE: 3 1/2 inch diskette
COMPUTER: Dell Pentium
OPERATING SYSTEM: MS DOS V6.22
SOFTWARE: ASCII Text
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       APPLICATION NUMBER: 08/476,102
FILING DATE: JUN-5-1995
ATTORNEY/AGENT INFORMATION:
NAME: MICHAELE S. MARKS
NAME: 41,971
REFERENCE/DOCKET NUMBER: PB186F3
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               422 ProAlaCysAlaSerLeuAspMet 429
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 25 CCGGCCTGCGCGAGCCTGGACATG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            CURRENT APPLICATION DATA:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             PRIOR APPLICATION DATA:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     £
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  STATE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              RESULT 5
US-09-557-884-1
                   292
                                                                                                                282
                                                                                                                                                                                 302
                                                   262
                                                                                 505
                                                                                                                                                 445
                                                                                                                                                                                                             385
                                                                                                                                                                                                                                            322
                                                 ά
                                                                                 셤
                                                                                                                à
                                                                                                                                         g
                                                                                                                                                                                 à
                                                                                                                                                                                                           용
                                                                                                                                                                                                                                            à
                                                                                                                                                                                                                                                                        g
                                                                                                                                                                                                                                                                                                           ò
                                                                                                                                                                                                                                                                                                                                    g
                                                                                                                                                                                                                                                                                                                                                                       à
                                                                                                                                                                                                                                                                                                                                                                                                   g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ద
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  음
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              셤
                                                                                                                                                                                                                                                                                                                                                                                                                                      ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              GENERAL INFORMATION:
APPLICANT: Marc J. Rubenfield et al.
APPLICANT: Marc J. Rubenfield et al.
TITLE OF INVENTION: NUCLEIC ACID AND AMINO ACID SEQUENCES RELATING TO PSEUDOMONAS TITLE OF INVENTION: AERUGINOSA FOR DIAGNOSTICS AND THERAPEUTICS
FILE REPERENCE: 107196.136
CURRENT APPLICATION NUMBER: US/09/252,991A
CURRENT FILING DATE: 1999-02-18
PRIOR APPLICANION NUMBER: US 60/074,788
PRIOR FILING DATE: 1998-02-18
PRIOR FILING DATE: 1998-02-18
RRIOR FILING DATE: 1998-07-27
NUMBER OF SEQ ID NOS: 33142
SEQ ID NOS: 33142
                                                                                                                                                                                                                                                                                                                                           340
                                                                AlaAlaLeuAlaLeuGlyHisAlaValGlyLeuProPheAspAlaMetLeuGlyAlaLeu 300
                                                                               LysAlaPheSerGlyLeuAlaHisArgCysGlnTrpValArgGluArgGlnGlyValSer 320
                                                                                                                                                                                                                                                      GlyAlaAspIleAsp-----GlyLysLeuValLeuLeuAlaGlyGlyAspGlyLys 357
                                                                                                                                                                                                                                                                                                                                                                                                                                                398 ValAlaThrLeuAspGluAlaValArgGlnAlaAlaGluLeuAlaArgGluGlyAspAla 417
                                                                                                                                                                                                                                                                                                                                                                                                      :::||| ||||||| :::|:
|201 ATTGGTGAAGATGCGCCTGTCGAACAAGCCATTCAAGGCGCAACTAAAATTTTACAT
LysLeuLeuProValGlyGluLeuLysIleArgGlyAlaHisAsnTyrSerAsnAlaLeu
                                                                                                                                                              AAAAAATTTAAAGGACTAGAGCACCGCTGTGAGTACGTTAAAACCGTGCATGATGTCCGT
                                                                                                                                                                                              TyrTyrAspAspSerLysAlaThrAsnValGlyAlaAlaLeuAlaAlaIleGluGlyLeu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ValLeuLeuSerProAlaCysAlaSerLeuAspMetPheLysAsnPheGluGluArgGly
                               841 CGGTTAATTAAAAGCTCAGATTTATATTTCAAGGTATGCACAATGTAGCTAATGCTTTA
                                                                                                                                                                                                                                                                                                                                                                                    LeuGlyArgAspAlaGlyLeuIleAlaGlnAlaLeuGlyAsnAlaValProLeuValArg
                                                                                                                                                                                                                                                                                                                                                                                                                                                                               1261 GCAGCAACGCTTAAAGAAGCTGTCGAGCTGTCAACGTGAAACACAAGCTGAAGATGTG
                                                                                                                                                                                                                                                                                                                       GlyAlaAspPheHisAspLeuArgGluProValAlaArgPheCysArgAlaValValLeu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          567
188
0
0
0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  US-09-701-229-2 (1-448) x US-09-252-991A-7787 (1-567)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Conservative:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Mismatches:
Indels:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              438 ArgLeuPheAlaLysAlaValGluGluLeu 447
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Matches:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Length:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      i-09-252-991A-7787/c
Sequence 7787, Application US/09252991A
Patent No. 6551795
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Pseudomonas aeruginosa
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            72e-96
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       951.00
100.00%
100.00%
42.08%
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Percent Similarity:
Best Local Similarity:
Query Match:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ; ORGANISM: Pseud
US-09-252-991A-7787
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Alignment Scores:
                                                                                                                                                                                                                                                                                                                                                   1141
                                                                                              901
                                                                                                                                                           961
                                                                                                                                                                                                                                                                                       1081
                                                                281
                                                                                                                               301
                                                                                                                                                                                           321
                                                                                                                                                                                                                                                          341
                                                                                                                                                                                                                                                                                                                       358
                                                                                                                                                                                                                                                                                                                                                                                  378
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              TYPE: DNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               LENGTH:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ..
9
                               셤
                                                                                         g
                                                                                                                            à
                                                                                                                                                        ద
                                                                                                                                                                                                                요
 õ
                                                              ç
                                                                                                                                                                                       ò
                                                                                                                                                                                                                                                      à
                                                                                                                                                                                                                                                                            g
                                                                                                                                                                                                                                                                                                                  ò
                                                                                                                                                                                                                                                                                                                                              g
                                                                                                                                                                                                                                                                                                                                                                                  ö
                                                                                                                                                                                                                                                                                                                                                                                                          g
                                                                                                                                                                                                                                                                                                                                                                                                                                              à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                            8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             à
```

TELECOMMUNICATION INFORMATION;

242 LysAlaPheGlyLeuIleGluGluAspGlyGlnLysTrpLeuAlaPheGlnPheAspLys 261

421 98

326

381

```
1203912 GAAGCTACATTGGTTGGTCGCCATAATTATATGAACATTTTGGCAGCAACAGCATTGGCA 1203971
                                                                                                                                                                                                                                                                                                                                                       ---TTTGGTCGAGAT 1204250
                                                                                                                                                                                                                                                                                                                                                                                                                       -----TTG 1204289
                                                                                                                                                                                                                                                                                                                                                                                                                                                                          GATCATCGTTTTCAATTAGTGCATCAAGCTAATGGCATTCGTTGGATTAATGACTCTAAA 1204091
                                                                                                                                                                                                                                                                                                                                                                                                                                                      ----GluGlyAspAla 417
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Hamilton O. Smith
J. Craig Venter
J. Craig Venter
TITLE OF INVENTION: The Nucleotide sequence of
the Haemophilus influenzae Rd Genome, Fragments
Thereof, and Uses Thereof
                                                                                  GluLeuLysIleArgGlyAlaHisAsnTyrSerAsnAlaLeuAlaAlaLeuAlaLeuGly
                                                                                                                             AlaHisArgCysGlnTrpValArgGluArgGlnGlyValSerTyrTyrAspAspSerLys
                                                                                                                                                                                                                                                                                                                         367 ProvalAlaArg------PheCysArgAlaValValLeuLeuGlyArgAsp
                                                                                                                                                                                                                                                                                                                                                                                       AlaGlyLeuIleAlaGlnAlaLeuGlyAsnAlaValProLeuValArgValAlaThrLeu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ValLeuLeuSerProAlaCysAlaSerLeuAspMetPheLysAsnPheGluGluArgGly
                                                              HisAlaValGlyLeuProPheAspAlaMetLeuGlyAlaLeuLysAlaPheSerGlyLeu
                                                                                                                                                                                                                                                                                                                                                                                                                       1204251 GGTGCGCTGCTTGCAAATTTTCATCGCAAAGTTAT---
                                                                                                                                                                                                                                                                                                                                                       1204206 TTAATTAATCAACCACACATTATTTGTTATTGT----
                                                                                                                                                                                                                                                                                                                                                                                                                                                        AspGluAlaValArgGlnAlaAlaGluLeuAlaArg-
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              MEDIUM TYPE: 3 1/2 inch diskette
COMPUTER: Dell Pentlum
OPERATING SYSTEM: MS DOS v6.22
SOFTWARE: ASCII Text
CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/09/643,990A
FILLIG DATE: 23-aug-2000
CLASSIFICATION: -CURROWN>
PRIOR APPLICATION DATA:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                APPLICATION NUMBER: 08/487,429
FILING DATE: 1995-06-07
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ADDRESSEE: Human Genome Scier
STREET: 9410 Key West Avenue
CITY: Rockville,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Sequence 1, Application US/09643990A
Patent No. 65281289
GENERAL INFORMATION:
APPLICANT: ROBERT D. Fleischmann
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Adams
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    COMPUTER READABLE FORM:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     CORRESPONDENCE ADDRESS
ADDRESSEE: Human (
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     1204410 GAAGAATTT 1204418
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Mark D. Adaı
Owen White
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     NUMBER OF SEQUENCES:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ArgleuPhe 440
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    USA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   20850
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 STATE: MD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    COUNTRY:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   US-09-643-990A-1
267
                                                              287
                                                                                                                                                                                                                                                                                                                                                                                       382
                                                                                                                                                                                                                                                                                                                                                                                                                                                        402
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        418
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     438
                                                                                                                           307
                                                                                                                                                           1204032
                            g
                                                                                                                           ò
                                                                                                                                                        g
                                                                                                                                                                                                                     g
                                                                                                                                                                                                                                                                                     g
                                                                                                                                                                                                                                                                                                                                                    g
                                                                                                                                                                                                                                                                                                                                                                                       ò
                                                                                                                                                                                                                                                                                                                                                                                                                      셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                    ογ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ŏ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   셤
                                                              à
                                                                                           g
                                                                                                                                                                                           ò
                                                                                                                                                                                                                                                       δ
                                                                                                                                                                                                                                                                                                                       δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     1203272
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1203329
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     1203510 GCGAAAGCTGCTGTGTGAAAGTTGGTATGGGGGGAAATATTGGGATTCCCGCTTTGTCA 1203569
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     1203749
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               1203750 GTAGGTGTGTTGAACAATGAAGATAGGCTGACTTTTGGGGAAAACGAAAATCAAGCGAAA 1203809
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                1203852 AAAACTGAAAATGGCAAGCAATATTTAATGGTAAAAGATGAAGTGATTTTACCTTGTGAA 1203911
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1203810 CATACCGTT-----TCTTTTGCGGAAATAGTGCGGAT-----TATTGGCTA 1203851
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     150
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      110
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    130
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 246
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   566
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  151 LeuLeuAlaAspAspIleGluLeuTyrValLeuGluLeuSerSerPheGlnLeuGluThr 170
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ArgTyrAspGlyMetAlaAspTyrHisLeuAlaLysHisArgIlePheArgGlyAlaArg 210
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  171 CysAspArgLeuAsnAlaGluValAlaThrValLeuAsnValSerGluAspHisMetAsp 190
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 GlnValValValAsnArgAlaAspAlaLeuThr------ArgProLeuIleAla 226
                                                                                                                                                                                                                                                                                                                                                                                                                                                                     70
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       90
                                                                                                                                                                                                                                                                                                                                      12 ValValGlyLeuGlyLysSerGlyMetSerLeuValArgTyrLeuAlaArgArgGlyLeu 31
                                                                                                                                                                                                                                                                                                                                                                                                      ProPheAlaValValAspThrArgGluAsnProProGluLeuAlaThrLeuArgAlaGln 51
                                                                                                                                                                                                                                                                                                                                                                                                                         1203162 ATCATCGGGCTTGGCAAAACAGGTCTTTCTTGTGTGGATTATCTCTTATCCCAACAGGCT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                     TyrProGln----ValGluValArgCysGlyGluLeuAspAlaGluPheLeuCysSerAla
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    1203273 ---CCICAAAATATCCCTCTTCATACTGGTAGTTTAAATCAGGAATGGTTACTTGAAAGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  71 ArgGluLeuTyrValSerProGlyLeuSerLeuArgThrProAlaLeuValGlnAlaAla
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  AlaLysGlyValArgIleSerGlyAspIleAspLeuPheAlaArgGluAlaLysAlaPro
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   111 IleValAlaIleThrGlySerAsnAlaLysSerThrValThrThrLeuValGlyGluMet
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   AlaValAlaAlaAspLysArgValAlaValGlyGlyAsnLeuGlyThrProAlaLeuAsp
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       AspThrValProCysTrpSerPheGlyLeuAsnLysProAspPheLysAlaPheGlyLeu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                IleGluGluAspGlyGlnLysTrpLeuAlaPheGlnPheAspLysLeuLeuProValGly\\
                                                                                                                                                                                        Length:
Matches:
Conservative:
Mismatches:
Indels:
                                                                                                                                                                                                                                                                                                      US-09-701-229-2 (1-448) x US-09-557-884-1 (1-1830121)
                                                                                                                           NO: 1:
        TELEFAX: 301-309-8439
INFORMATION FOR SEQ ID NO: 1:
SEQUENCE CHARACTERISTICS:
LENGTH: 1830121 base pairs
                                                                                              TOPOLOGY: linear SEQUENCE DESCRIPTION: SEQ ID US-09-557-884-1
TELEPHONE: 301-309-8504
                                                                            TYPE: nucleic acid
STRANDEDNESS: double
                                                                                                                                                                                      4.12e-83
879.00
60.72%
46.50%
38.89%
                                                                                                                                                                                                                 Percent Similarity:
Best Local Similarity:
Query Match:
                                                                                                                                                                          Alignment Scores:
Pred. No.:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 191
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 211
                                                                                                                                                                                                                                                                                                                                                                                                     32
                                                                                                                                                                                                                                                                                                                                                                                                                                                                     22
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    91
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   131
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 227
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                247
                                                                                                                                                                                                           Score:
                                                                                                                                                                                                                                                                                                                                    ò
                                                                                                                                                                                                                                                                                                                                                                     셤
                                                                                                                                                                                                                                                                                                                                                                                                     ò
                                                                                                                                                                                                                                                                                                                                                                                                                                  g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    φ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 δy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             qq
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ŏ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             qq
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 9. dg
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                å
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ò
```

::: ||| ----TATTGGCTA 1203851

1204145

346

401

417

381

```
1203852 AAAACTGAAAATGGCAAGCAATATTTAATGGTAAAAGATGAAGTGATTTTACCTTGTGAA 1203911
                                                                                                                                                                                                                                                                                                                                                                                                                     -----TTTGGTCGAGAT 1204250
                                                                                                                                                                                                              1204032 GATCATCGTTTTCAATTAGTGCATCAAGCTAATGGCATTCGTTGGATTAATGACTCTAAA 1204091
                                                                                                                                                        1203912 GAAGCTACATTGGTTGGTCGCCATAATTATATGAACATTTTGGCAGCAACAGCATTGGCA
                                                                                                                                                                                                                                                                                                                                                LysLeuvalLeuLeuAlaGlyGlyAspGlyLysGlyAlaAspPheHisAspLeuArgGlu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               1204290 TTCGATACAATGGAACAAGCGATAGAATTTTTACGCCCAACATTGCAAAGCGGAGATATG
                                                                                                                       GluLeuLysIleArgGlyAlaHisAsnTyrSerAsnAlaLeuAlaAlaLeuAlaLeuGly
                                                                                                                                                                                          287 HisAlaValGlyLeuProPheAspAlaMetLeuGlyAlaLeuLysAlaPheSerGlyLeu
                                                                                                                                                                                                                                                                                                                              AlaThrAsnValGlyAlaAlaLeuAlaAlaIleGluGlyLeuGlyAlaAspIleAspGly
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         382 AlaGlyLeulleAlaGlnAlaLeuGlyAsnAlaValProLeuValArgValAlaThrLeu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            -----GluGlyAspAla
                                                  IleGluGluAspGlyGlnLysTrpLeuAlaPheGlnPheAspLysLeuLeuProValGly
                                                                                                                                                                                                                                                             307 AlaHisargCysGlnTrpValArgGluArgGlnGlyValSerTyrTyrAspAspSerLys
                                                                                                                                                                                                                                                                                                                                                                                                                                                                    367 ProvalAlaArg------PheCysArgAlaValLeuLeuGlyArgAsp
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 GENERAL INCOMPATION:

APPLICANT: MARC J. Rubenfield et al.

TITLE OF INVENTION: NUCLEIC ACID AND AMINO ACID SEQUENCES RELATING:

TITLE OF INVENTION: ARRUGINOSA FOR DIAGNOSTICS AND THERAPEUTICS

TITLE OF INVENTION: ARRUGINOSA FOR DIAGNOSTICS AND THERAPEUTICS

CURRENT APPLICATION NUMBER: US/09/252,991A

CURRENT FILING DATE: 1999-02-18

PRIOR APPLICATION NUMBER: US 60/094,190

PRIOR APPLICATION NUMBER: US 60/094,190

PRIOR FILING DATE: 1998-02-18

PRIOR FILING DATE: 1998-02-18

SEQ ID NO 7928

LENGTH: 564
                  ----TCTTTTGCGGAAAATAGTGCGGAT----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        564
127
0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            402 AspGluAlaValArgGlnAlaAlaGluLeuAlaArg----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Length:
Matches:
Conservative:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1204206 TTAATTAATCAACCACACATTATTTGTTATTGT-----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Sequence 7928, Application US/09252991A Patent No. 6551795
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ORGANISM: Pseudomonas aeruginosa
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       2.01e-60
626.00
100.00%
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 1204410 GAAGAATTT 1204418
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                438 ArgLeuPhe 440
1203810 CATACCGTT-
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   US-09-252-991A-7928/c
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Score:
Percent Similarity:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      US-09-252-991A-7928
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Alignment Scores:
                                                                                                                     267
                                                                                                                                                                                                                                                                                                                                327
                                                                                                                                                                                                                                                                                                                                                                                                   347
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     TYPE: DNA
                                                                                   g
                                                                                                                                                    g
                                                                                                                                                                                                                                                                                            셤
                                                                                                                                                                                                                                                                                                                                                                                                                                  셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ద
                                                    à
                                                                                                                     ò
                                                                                                                                                                                        ò
                                                                                                                                                                                                                       ద
                                                                                                                                                                                                                                                           ò
                                                                                                                                                                                                                                                                                                                                ò
                                                                                                                                                                                                                                                                                                                                                             a
                                                                                                                                                                                                                                                                                                                                                                                                   à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                    à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         õ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          1203222 AATATTCGTGTGATTGATACTCGAAAAAATCCTACTGGTATTGATAAACTT----- 1203272
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           1203570 TIGITGAATGAAGATTGTGAACTTTATGTACTAGAGCTTTCTAGTTTTCAGCTTGAGACA 1203629
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               1203630 ACTIATAGCTTAAAAGCTGCGCAGCGACTGTCTTGAACGTGACGAAGATCATATGGAT 1203689
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  1203162 ATCATCGGCCTTGGCAAAACAGGTCTTTCTTGTGTGGATTATCTCTTATCCCAACAGGCT 1203221
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   131 AlavalalaAlaAspLysArgValAlaValGlyGlyAsnLeuGlyThrProAlaLeuAsp 150
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  IleValalaIleThrGlySerAsnalaLysSerThrValThrThrLeuValGlyGluMet 130
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   210
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    GlnValValValAsnArgAlaAspAlaLeuThr------ArgProLeuIleAla 226
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       AspThrValProCysTrpSerPheGlyLeuAsnLysProAspPheLysAlaPheGlyLeu 246
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          70
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ValValGlyLeuGlyLysSerGlyMetSerLeuValArgfyrLeuAlaArgArgGlyLeu 31
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       51
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          71 ArgGluLeuTyrValSerProGlyLeuSerLeuArgThrProAlaLeuValGlnAlaAla 90
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1203750 GTAGGTGTGTTGAACAATGAAGATAGGCTGACTTTTGGGGAAAACGAAAATCAAGCGAAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ProPheAlaValValAspThrArgGluAsnProProGluLeuAlaThrLeuArgAlaGln
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         TyrProGln---ValGluValArgCysGlyGluLeuAspAlaGluPheLeuCysSerAla
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ArgTyrAspGlyMetAlaAspTyrHisLeuAlaLysHisArgIlePheArgGlyAlaArg
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         LeuLeuAlaAspAspIleGluLeuTyrValLeuGluLeuSerSerPheGlnLeuGluThr
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           171 CysAspArgLeuAsnAlaGluValAlaThrValLeuAsnValSerGluAspHisMetAsp
                                                                                                                                                                                                                                                                                                                                                                                                                                                US-09-701-229-2 (1-448) x US-09-643-990A-1 (1-1830121)
                                                                                                                                                                                                                                                                                                                                                               Conservative:
Mismatches:
Indels:
                                             NAME: Kenley K. Hoover
REGISTRATION NUMBER: 40,302
REFERENCE/DOCKET NUMBER: PB186PIC1
TELECOMMUNICATION INFORMATION:
TELEPHONE: 301-610-5790
INFORMATION FOR SEQ ID NO: 1:
                                                                                                                                                                                                                                                                                                                              Length:
Matches:
                                                                                                                                                                                                                                                           ä
APPLICATION NUMBER: 08/426,787
                                                                                                                                                                                                                                                             ő
                                                                                                                                                                                        LENGIH: 1830121 base pairs
                                                                                                                                                                                                                            TOPOLOGY: linear SEQUENCE DESCRIPTION: SEQ ID US-09-643-990A-1
              FILING DATE: 1995-04-21 ATTORNEY/AGENT INFORMATION:
                                                                                                                                                                                                       TYPE: nucleic acid
STRANDEDNESS: double
                                                                                                                                                                      SEQUENCE CHARACTERISTICS:
                                                                                                                                                                                                                                                                                                                                             879.00
60.72%
46.50%
38.89%
                                                                                                                                                                                                                                                                                                                                                           Percent Similarity:
Best Local Similarity:
                                                                                                                                                                                                                                                                                                          Alignment Scores:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   111
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         151
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    211
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    12
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      32
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         22
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               191
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       227
                                                                                                                                                                                                                                                                                                                                                                                               Query Match:
                                                                                                                                                                                                                                                                                                                              ..
9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ద
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  å
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ð
```

RELATING TO PSEUDOMONAS

; US-08 Align Pred. Score	9 ei
Percel Best Ouery DB:	Percent Similarity: 53.16% Best Local Similarity: 35.73% Ouery Match: 26.70% DB:
-09	-701-229-2 (1-448) x US-08-934
7 qa	
φ	23 ValArgTyrLeuAlaArgArgGl
qa :	554 GCTCGTTGTTGGACAAGCTAGG
Z a	
Qy	60 GlyGluLe
qq	665 GGTGGCCATCCTTTGGAACTCTT
ර් යි	/s valserProGiyLeuserLeuAr :::      ::: 716AATCCAGGTATCCCCTACAA
Qy	95 ArgileSerGlyAspileAspLe
g ,	
· 점	11) IIIGIYSEIASIMIALYSSEIIII 
Qy	135 AspLysArgValAlaValGlyGl
qa	::: ::    893 GGCCAACATGGTCTTTTATCAGG
QY	153 AlaAspAspIleGluLeuTyrVa
qq	rcgacaag
Qy	· 173 ArgLeuAsnAlaGluValAlaTh
qa	1013 GAATTTCATCCAGAGATTGCGGT
δλ	193 AspGlyMetAlaAspTyrHisLe
අු	1073 GGGTCATTTTCGGAATATGTAGC
δò	210 ArgGlnValValValAsnArgAl
අු	1133 GATTTCCTTGTCTTGAACTTTAA
δλ	230 ProCysTrpSerPheGlyLeuAs
qa	1193 CCATTTTCAACACTTGA
Qy	250 AspGlyGlnLysTrpLeuAlaPh
ą a	1235 GATGGTCAACTCTACTT
l Qy	270 IleArgGlyAlaHisAsnTyrSe
	division of the control of the contr

```
AAAAGGTTGAT------GGAGCTTATCTGGAA 1234
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      hrValThrThrLeuValGlyGluMetAlaValAlaAla 134
                                                                                                                                                                                                                                                                                                                                                                                                                                 1.yAsnLeuGlyThrProAlaLeuAspLeu-----Leu 152
||||||::||| ||||||||
|GGAATATCGGCTATCCAGCTAGTCAAGT 952
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        hrValLeuAsnValSerGluAspHisMetAspArgTyr 192
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   euAlaLysHisArgIle-----PheArgGlyAla 209
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              laAspAlaLeuThrArgProLeuIleAlaAspThrVal 229
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  heGlnPheAspLysLeuLeuProValGlyGluLeuLys 269
                                                                                                                                                                                                                                                                                                                                  TGGATGAAGATTGCTCTTATGGTGAAA----- 715
                                                                                                                                                                                                                                                                                                                                                                       rgThrProAlaLeuValGlnAlaAlaAlaLysGlyVal 94
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         snLysProAspPheLysAlaPheGlyLeuIleGluGlu 249
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             erAsnAlaLeuAlaLeuAlaLeuGlyHisAlaVal 289
                                                                                                                                --IlevalvalGlyLeuGlyLysSerGlyMetSerLeu 22
:::|||:::|||||| |||||||| |||
rccrrgrrragGrrrgGccaAGrcrGGrGAArCrGCA 553
                                                                                                                                                                                                              || ::
|Greccattgtgacagtaaatgatgggaaacctttcgag 613
                                                                                                                                                                                                                                                                         ||||
TGCTGGAA-----GAAGGGATCAGGTCATTACA 664
                                                                                                                                                                                                                                                        59
                                                                                                                                                                                                                                                                                                                 euAspAlaGluPheLeuCysSerAlaArgGluLeuTyr 74
                                                                                                                                                                                             lyLeuProPheAlaValValAspThrArg------
                                                                                                                                                                                                                                                      hrLeuArgAlaGlnTyrProGlnValGluValArgCys
 2193
164
80
178
37
Length:
Matches:
Conservative:
Mismatches:
Indels:
Gaps:
                                                                                                       481-1 (1-2193)
```

œ

SEQUENCE ; LENGTE ; TYPE: ; STRANE ; TOPOLC US-09-290-602	Alignment Scc Pred. No.: Score: Percent Simil Best Local Si Query Match:	DB: US-09-701-229	Qy 7	Db 494	E)	Oy 40	Db 614	оу 60	•	Qy 75	Db 716	7	Qy 115	Db 833	Qy 135	Db 893	Qy 153	Db 953	Qy 173	Db 1013	0γ 193	Db 1073	Qy 210	Db 1133	Oy 230	Db 1193	Oy 250	Db 1235
1348 309 1408	329 1468 349	1519 369	1576	389	408	1696	428	1756		m			· · · · · · · · ·											-				_
:::		AACAGCAAGGTCGTC SASPLeuArgGluProValAla		370 ArgPheCysArgAlaValValLeuLeuGlyArgAspAlaGlyLeuIleAlaGlnAlaLeu : ::	GlyAsnAlaValProLeuValArgValAlaThrLeuAspGluAlaValArgGlnAla		409 AlaGluLeuAlaArgGluGlyAspAlaValLeuLeuSerProAlaCysAlaSerLeuAsp	ACTCAAGGAGATGTGGTTCTTTAGTCCTGCCAATGCCAGCTGGGAT	429 MetPheLysAsnPheGluGluArgGlyArgLeuPheAlaLysAlaValGluGluLeu 447	181	-602-1 e 1, Application US/09290602	Patent No. 6350598 GENERAL INFORMATION:	AFFLICANT: Weills, Nichold G. APPLICANT: Fueyo, Joanna L. APPLICANT: Lonetto, Michael A	TITLE OF INVENTION: NOVEL MULD	CORRESPONDENCE ADDRESS: ADDRESSEE: Dechert Price & Rhoads	lantic	STATE: PA COUNTRY: US	P: 19103 UTER READABLE FORM:	MEDIUM TYPE: Diskette COMPUTER: IBM Compatible	OPERATING SYSTEM: DOS SOFTWARE: FastSEO for Windows Version 2.0			IOR APPLICATION DATA: APPLICATION NUMBER: 08/934.481	A	NAME: Dickinson, Todd Q REGISTRATION NUMBER: 28.354	REFERENCE/DOCKET NUMBER: GM10070A	TELEPHONE: 215-994-2252 TELEFAX: 215-994-2222	TELEX: INFORMATION FOR SEQ ID NO: 1:
Db 1 Oy Dp 1		o vo	Dp 1	Oy Db	Οy	Db 1	oy .	Db 1			RESULT 9 US-09-290-602-1 ; Sequence 1, A	; Patent N ; GENERAL	APPLI APPLI	TITLE	CORRE	STR	; STA	; COMPU	, MED	; OPE	; CURRE	FIL	PRIOR	FIL	; NAM	; REF	; TEL	; TELEX ; INFORMATI

```
1132
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   3 GATTICCTIGICTIGAACITIAATCAAGACTIGACTICCAAGACAGAAGCCACIGTIGIA 1192
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     3 ArgLeuAsnAlaGluValAlaThrValLeuAsnValSerGluAspHisMetAspArgTyr 192
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        3 AspGlyMetalaAspTyrHisLeuAlaLysHisArgIle------PheArgGlyAla 209
                                                                                                                                                                                                                                                                                                                                                                                                         4 GCTCGTTTGTTGGACAAGCTAGGTGCCATTGTGACAGTAAATGATGGGAAACCTTTCGAG 613
                                                                                                                                                                                                                                                                                                                                                                                                                                                                   :::|||||||:::
6 ---AATCCAGGTATCCCCTACAATGATTGAAAAGGCTTTGGCCAAGGGAATT 772
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                5 ThrGlySerAsnAlaLysSerThrValThrThrLeuValGlyGluMetAlaValAlaAla 134
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    5 AspLysArgValAlaValGlyGlyAsnLeuGlyThrProAlaLeuAspLeu-----Leu 152
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           3 GGGCAACATGGTCTTTTATCAGGGAATATCGGCTATCCAGCTAGTCAAGTGGCCCAAACT 952
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             3 AlaAspAspIleGluLeuTyrValLeuGluLeuSerSerPheGlnLeuGluThrCysAsp 172
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               0 ArgGlnValValValAsnArgAlaAspAlaLeuThrArgProLeuIleAlaAspThrVal 229
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     0 ProCysTrpSerPheGlyLeuAsnLysProAspPheLysAlaPheGlyLeuIleGluGlu 249
                                                                                                                                                                                                                                                                                                                                                                        3 ValargTyrLeuAlaArgArgGlyLeuProPheAlaValValAspThrArg----- 39
                                                                                                                                                                                                                                                                                                                                                                                                                                               0 GluAsnProProGluLeuAlaThrLeuArgAlaGlnTyrProGlnValGluValArgCys 59
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ValSerProGlyLeuSerLeuArgThrProAlaLeuValGlnAlaAlaAlaAlyVal
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       5 GGTGGCCATCCTTTGGAACTCTTGGATGAAGAGTTTGCTCTTATGGTGAAA------
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            3 GGGTCATTTTCGGAATATGTAGCAGCCAAGTGGGAATATCCAGAACAAGATGACAGCAGCT
                                                                                                                                         2193
164
80
178
37
                                                                                                                                         Length:
Matches:
Conservative:
Mismatches:
Indels:
Gaps:
                                                                                                                                                                                                                                                                  :9-2 (1-448) x US-09-290-602-1 (1-2193)
                                                                                                                                       5.08e-57
603.50
53.16%
35.73%
26.70%
              rH: 2193 base pairs
    nucleic acid
VDEDNESS: double
E CHARACTERISTICS:
                                                                    .OGY: linear
                                                                                                                                                                            llarity:
Similarity:
                                                                                                                          ores:
```

σ

```
nucleic acid
          STRANDEDNESS: dou
                                                                                                                                   Best Local Similarity:
                                                                                                                    Percent Similarity:
                                           US-08-961-527-195
                                                                          Alignment Scores:
                                                                                                                                                                                                                                                                                                                                                                                            9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        229
                                                                                                                                               Query Match:
                                                                                          ..
02
                                                                                                                                                                                                                                                g
                                                                                                                                                                                                                                                                            ò
                                                                                                                                                                                                                                                                                                        g
                                                                                                                                                                                                                                                                                                                                    ŏ
                                                                                                                                                                                                                                                                                                                                                                g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 qq
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ŏ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       엄
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              qq
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             δy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                qq
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   g
                                                                                                                                                                                                                     ò
                                                                                                                                                                                                                                                                                                                                                                                                                       g
                                                                                                                                                                                                                                                                                                                                                                                                                                                    ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ŏ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Qγ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ద
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ò
                                                                                                                                                                                                                                                                                                                                                                                              δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            APPLICANT: Charles Kunsch
TITLE OF INVENTION: Streptococcus pneumoniae Polynucleotides and Sequences
UNMER OF SEQUENCES: 391
CORRESPONDENCE ADDRESS:
                                                                                                                                                                                         1520 TIGATIGCAGGIGGITIGGACCGIGGCAAIGAGITIGACGAAIIG---GIGCCAGACAIT 1576
                                                                                                                                                                                                                                                                                                                 1577 ACTGGACTCAAGAAGATGGTCATCCTGGGTCAATCTGCAGAACGTGTCAAACGGGCAGCA 1636
                                                                                                                                                                                                                                                                                                                                                                          .637 GACAAGGCTGGTGTCGCTTATGTGGAGGCGACAGATATTGCAGATGCGACCGCAAGGCC 1696
                                                                                                                                                                                                                                                                                                                                                  408
                                                         309
                                                                                                               310 CysGlnTrpValArgGluArgGlnGlyValSerTyrTyrAspAspSerLysAlaThrAsn 329
                                                                                                                                                                                                                                                                                                                                                                                                        409 AlaGluLeuAlaArgGluGlyAspAlaValLeuLeuSerProAlaCysAlaSerLeuAsp 428
270 IleArgGlyAlaHisAsnTyrSerAsnAlaLeuAlaAlaLeuAlaLeuGlyHisAlaVal 289
                                                                                                                                                                         ValGlyAlaAlaLeuAlaAlaIleGluGlyLeuGlyAlaAspIleAspGlyLysLeuVal 349
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 MetPheLysAsnPheGluGluArgGlyArgLeuPheAlaLysAlaValGluGluLeu 447
                            GTTCCAGGTAGCCACAATGTGGAAAATGCCCTTGCGACTATTGCTGTAGCCAAGCTTCGT
                                                         GlyLeuProPheAspAlaMetLeuGlyAlaLeuLysAlaPheSerGlyLeuAlaHisArg
                                                                          LeuLeuAlaGlyGlyAspGlyLySGlyAlaAspPheHisAspLeuArgGluProValAla
                                                                                                                                                                                                                                                                                       370 ArgPheCysArgAlaValValLeuLeuGlyArgAspAlaGlyLeuIleAlaGlnAlaLeu
                                                                                                                                                                                                                                                                                                                                                390 GlyAsnAla---ValProLeuValArgValAlaThrLeuAspGluAlaValArqGlnAla
                                                                                                                                                                                                                                                                                                                                                                                                                           MEDIUM TYPE: Diskette, 3.50 inch, 1.4Mb storage COMPUTER: HP Vectra 486/33 OPERATING SYSTEM: MSDOS version 6.2 SOFTWARE: ASCII Text CURRENT APPLICATION DATA:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ADDRESSEE: Human Genome Sciences, Inc. STREET: 9410 Key West Avenue CITY: Rockville STATE: Maryland COUNTRY: USA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               APPLICATION NUMBER: US/08/961,527
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Sequence 195, Application US/08961527 Patent No. 6420135 GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          TELECOMMUNICATION INFORMATION:
TELEPHONE: (301) 309-8514
INFORMATION FOR SEQ ID NO: 195:
SEQUENCE CHARACTERISTICS:
LENGTH: 6693 base pairs
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 NAME: Brookes, A. Anders
REGISTRATION NUMBER: 36,373
REFERENCE/DOCKET NUMBER: PB
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ATTORNEY/AGENT INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            CLASSIFICATION: 424
PRIOR APPLICATION DATA:
APPLICATION NUMBER:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          COMPUTER READABLE FORM:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       US-08-961-527-195/c
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       FILING DATE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              FILING DATE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             20850
                                                                                                                                                                                                  1469
                                                                                                                                                                                                                               350
                                                       290
                                                                                                                                                                         330
                                                                                                                                                                                                                                                                                                                                                                                                                                                                429
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          RESULT 10
 ð
                         셤
                                                      ŏ
                                                                                g
                                                                                                         ò
                                                                                                                                         셤
                                                                                                                                                                       δ
                                                                                                                                                                                              g
                                                                                                                                                                                                                              å
                                                                                                                                                                                                                                                         셤
                                                                                                                                                                                                                                                                                    ö
                                                                                                                                                                                                                                                                                                               q
                                                                                                                                                                                                                                                                                                                                               ö
                                                                                                                                                                                                                                                                                                                                                                          g
                                                                                                                                                                                                                                                                                                                                                                                                       ò
                                                                                                                                                                                                                                                                                                                                                                                                                                    g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          a
```

```
3044
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    3784 GATCAATTTAAAAATAAGAAAGTCCTTGTTTTAGGTTTGGCCAAGTCTGGTGAATCTGCA 3725
                                                                                                                                                                                                                                                                                                                                                                                                                                     3724 GCTCGTTTGTTGGACAAAGCTAGGTGCCATTGTGACAGTAAATGATGGAAACCTTTCGAG 3665
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         3563
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 3562 ---AATCCAGGTATCCCCTACAACAATCCCATGATTGAAAAGGCTTTGGCCAAGGGAATT 3506
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     3505 CCAGTCTTGACTGAGGTGGAATTGGCTTATTTGATTTCAGAAGCACCGATTATTGGTATC 3446
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            3385 GGCCAACATGGTCTTTTATCAGGGAATATCGGCTATCCAGCTAGTCAGGTTGCTCAAATA 3326
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        3146
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       3664 GACAATCCAGCTGCCCAAAGTTTGCTGGAA-----GAAGGGATCAAGGTCATTACA 3614
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                245
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            95 ArglleSerGlyAspIleAspLeuPheAlaArgGluAlaLysAlaProIleValAlaIle 114
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           115 ThrGlySerAsnAlaLysSerThrValThrThrLeuValGlyGluMetAlaValAlaAla 134
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              135 AspLysArgValAlaValGlyGlyAsnLeuGlyThrProAlaLeuAspLeu-----Leu 152
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             153 AlaAspAspIleGluLeuTyrValLeuGluLeuSerSerPheGlnLeuGluThrCysAsp 172
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            173 ArgLeuAsnAlaGluValAlaThrValLeuAsnValSerGluAspHisMetAspArgTyr 192
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   246 LeulleGluGluAspGlyGlnLysTrpLeuAlaPheGlnPheAspLysLeuLeuProVal 265
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     266 GlyGluLeuLysIleArgGlyAlaHisAsnTyrSerAsnAlaLeuAlaAlaLeuAlaLeu 285
                                                                                                                                                                                                                                                               7 AspHisPheArg-----IleValValGlyLeuGlyLysSerGlyMetSerLeu 22
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 59
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             74
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                94
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             3613 GGTGGCCATCCTTTGGAACTCTTGGATGAAGAGTTTGCCCTTATGGTGAA-----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              40 GluAsnProProGluLeuAlaThrLeuArgAlaGlnTyrProGlnValGluValArgCys
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                75 ValSerProGlyLeuSerLeuArgThrProAlaLeuValGlnAlaAlaAlaLysGlyVal
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            193 AspGlyMetalaAspTyrHisLeuAlaLysHisArgIle------PheArgGlyAla
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     3205 GGGTCATTTTGGGAATATGTAGCAGCCAAGTGGAATATCCAGAACAAGATGACAGCGCT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                -----ValProCysTrpSerPheGlyLeuAsnLysProAspPheLysAlaPheGly
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         3085 GCCACTGTTGTACCATTTTCAACA-----CTTGAAAAGGTTGAT-----GGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      210 ArgGlnValValValAsnArgAlaAspAlaLeuThrArgProLeuIleAlaAspThr--
                                                                                                                                                                                                                                                                                                                                                                               23 ValArgTyrLeuAlaArgArgGlyLeuProPheAlaValValAspThrArg----
                                                               Conservative:
                                                                                                                                                                                                      US-09-701-229-2 (1-448) x US-08-961-527-195 (1-6693)
                                                                                             Mismatches:
         Length:
Matches:
                                                                                                                     Indels:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      2.81e-55
594.50
53.13%
35.21%
26.31%
```

```
243 GCGCTGGTACAGGCCGCCGCGCAAAGGTGTGCCGCATCTCCCGGTGACATCGTCTTCGCC 302
                                                    63 TACCIGGGGGGGGGGGTIGCCTITCGCGGTIGTCGATACCCGAGAGCCCGCGGAG 122
                                                                                                                                                                                                                                  85 AlaLeuvalGlnAlaAlaAlaLysGlyvalArgIleSerGlyAspIleAspLeuPheAla 104
                                                                                                                                                                                                                                                                                                    25 TyrLeuAlaArgArgGlyLeuProPheAlaValValAspThrArgGluAsnProProGlu
                                                                                                                                                                                                                                                                                                                                                                                                                                                             APPLICANT: Skatrud, Paul
APPLICANT: Peery, Robert
APPLICANT: Hoskins, Johann
APPLICANT: Wu, Chyun-Yeh Earnest
TITLE OF INVENTION: Blosynthetic Gene MurD of Streptococcus
NUMBER OF SEQUENCES: 3
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1350
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy disk
SORTWARE: PAtentIn Release #1.0, Version #1.30
CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/08/665,435A
FILING DATE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Length:
Matches:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         STREFT: Lilly Corporate Center CITY: Indianapolis STATE: Indianapolis COUNTRY: US
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            CLASSIFICATION: 435
ATTORNEY/AGENT INFORMATION:
NAME: Webster, Thomas D
REGISTRATION NUMBER: 39,872
REFERENCE/DOCKET NUMBER: X-9900
TELEPHONE: 317-276-3334
TELEFAX: 317-276-3861
                                                                                                                                                                                                                                                                                                                                                                                                        Sequence 1, Application US/08665435A Patent No. 5681694 GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1.86e-55 · 586.50
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               MOLECULE TYPE: DNA(genomic) HYPOTHETICAL: NO
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          1350 base pairs
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       TELEFAX: 317-276-3861
INFORMATION FOR SEQ ID NO:
SEQUENCE CHARACTERISTICS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            TYPE: nucleic acid
STRANDEDNESS: single
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 linea
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ANTI-SENSE: NO
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Alignment Scores:
Pred. No.:
Score:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     NAME/KEY:
LOCATION:
                                                                                                                                                                                                                                                                                                                                                                                             -08-665-435A-1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      US-08-665-435A-1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             LENGIH:
                                                   8
                                                                                         ò
                                                                                                                    용
                                                                                                                                                             ò
                                                                                                                                                                                             g
                                                                                                                                                                                                                                  ð
                                                                                                                                                                                                                                                                 a
                                                                                                                                                                                                                                                                                                      ò
                                                                                                                                                                                                                                                                                                                                        셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     APPLICANT: MATC J. Rubenfield et al.

TITLE OF INVENTION: NUCLEIC ACID AND AMINO ACID SEQUENCES RELATING TO PSEUDOMONAS
TITLE OF INVENTION: AREGOINOSA FOR DIAGNOSTICS AND THERAPEUTICS
TURNENT PRINCES: 107196.136
CURRENT APPLICATION NUMBER: US/09/252,991A
CURRENT FILING DATE: 1999-02-18
PRIOR FILING DATE: 1998-02-18
PRIOR PELING DATE: 1998-02-18
PRIOR APPLICATION NUMBER: US 60/094,190
PRIOR APPLICATION NUMBER: US 60/094,190
PRIOR FILING DATE: 1998-07-27
NUMBER OF SEQ ID NOS: 33142
SEQ ID NO 5552
                                                                                                                            2989 AATGAAATCGGTGTTCCAGGTAGCCACAATGTGGAAAATGCCCTTGCGACTATTGCTGTA 2930
                                                        2701 GTGCCAGACATTACTGGACTCAAGAAGATGGTCATCCTGGGTCAATCTGCAGAACGTGTC 2642
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          2581 ACCCGCAAGGCCTATGAGCTTGCGACTCAAGGAGATGTGGTTCTTCTTATAGTCCTGCCAAT 2522
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   2758 AGCAAGGTCGTCTTGATTGCAGGTGGTTTGGACCGTGGCAATGAGTTTGACGAATTG--- 2702
                                                                                                                                                                                                                                                                                                                                                                                                                       2641 AAACGGGCAGCAGACAAGGCTGGTGTCGCTTATGTGGAGGCGACAGATATTGCAGATGCG 2582
                                                                                                         325
                                                                                                                                                                      326 LysAlaThrAsnValGlyAlaAlaLeuAlaAlaIleGluGlyLeuGlyAlaAspIleAsp 345
                                                                                                                                                                                                                                             346 GlyLysLeuValLeuLeuAlaGlyGlyAspGlyLysGlyAlaAspPheHisAspLeuArg 365
                                                                                                                                                                                                                                                                                                                 GluProValAlaArgPheCysArgAlaValValLeuLeuGlyArgAspAlaGlyLeuIle 385
                                                                                                                                                                                                                                                                                                                                                                                    386 AlaGlnAlaLeuGlyAsnAla---ValProLeuValArgValAlaThrLeuAspGluAla 404
                                                                                                                                                                                                                                                                                                                                                                                                                                                          405 ValArgGlnAlaAlaGluLeuAlaArgGluGlyAspAlaValLeuLeuSerProAlaCys 424
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             425 AlaSerLeuAspMetPheLysAsnPheGluGluArgGlyArgLeuPheAlaLysAlaVal 444
                                  286 GlyHisAlaValGlyLeuProPheAspAlaMetLeuGlyAlaLeuLysAlaPheSerGly 305
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 306 LeuAlaHisArgCysGlnTrpValArgGluArgGlnGlyValSerTyrTyrAspAspSer
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           360
119
0
0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Conservative:
Mismatches:
Indels:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                US-09-701-229-2 (1-448) x US-09-252-991A-7552 (1-360)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Matches:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Length:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Sequence 7552, Application US/09252991A Patent No. 6551795
GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ORGANISM: Pseudomonas aeruginosa
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       7.73e-57
591.00
100.00%
100.00%
26.15%
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  2461 GCGGAGTTA 2453
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   445 GluGluLeu 447
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Best Local Similarity:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      RESULT 11
US-09-252-991A-7552
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        US-09-252-991A-7552
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Percent Similarity:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Alignment Scores:
                                                                                                                                                                                                                                                                                                                  366
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       TYPE: DNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     LENGTH:
                                                                                                                                                                                                                                                                          g
                                                                                                                                                                                                                                                                                                                                                g
                               ò
                                                          ద
                                                                                                  ò
                                                                                                                               g
                                                                                                                                                                        õ
                                                                                                                                                                                                   셤
                                                                                                                                                                                                                                  ò
                                                                                                                                                                                                                                                                                                               à
                                                                                                                                                                                                                                                                                                                                                                                    ò
                                                                                                                                                                                                                                                                                                                                                                                                                       셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                          à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 õ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     õ
```

à g ò a à

ð a ò 염 à

g

```
LysalaThrasnValGlyAlaAlaLeuAlaAlaIleGluGlyLeuGlyAlaAspIleAsp 345
                                                                                                                                                                                  366 GluProValAlaArgPheCysArgAlaValValLeuLeuGlyArgAspAlaGlyLeuIle 385
                                                                                                                                                                                                                                                    386 AlaGlnAlaLeuGlyAsnAla---ValProLeuValArgValAlaThrLeuAspGluAla 404
                                                                                                                                                                                                                                                                                                                          405 ValargGlnAlaAlaGluLeuAlaArgGluGlyAspAlaValLeuLeuSerProAlaCys 424
 928 GTCAAACACCGTCTCCAGTTTGTGGATGACATCAAGGGTGTTAAATTCTATAACGACAGT 987
                                                                                                                                                                                                                                                                                                                                                                                                    425 AlaSerLeuAspMetPheLysAsnPheGluGluArgGlyArgLeuPheAlaLysAlaVal
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       APPLICANT: Peery, Robert
APPLICANT: Hoskins, Joann
TITLE OF INVENTION: Biosynthetic Gene MurD of Streptococcus
TITLE OF INVENTION: pneumoniae
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  SOFTWARE: Patentin Release #1.0, Version #1.30 CURRENT APPLICATION DATA:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            APPLICATION NUMBER: US/08/665,435A
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ADDRESSEE: Eli Lilly and Company
STREET: Lilly Corporate Center
CITY: Indianapolis
STATE: Indiana
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       PC-DOS/MS-DOS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Sequence 3, Application US/08665435A Patent No. 5681694
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ATTORNEY/ACENT INFORMATION:
NAME: Webster, Thomas D
REGISTRATION NUMBER: 39,872
REFRENCE/DOCKET NUMBER: x-99(
TELECOMMUNICATION INFORMATION:
TELEPHONE: 317-276-3334
TELEFAX: 317-276-3861
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ZIP: 46285
COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy disk
COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            INFORMATION FOR SEQ ID NO: 3: SEQUENCE CHARACTERISTICS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                LENGIH: 1350 base pairs
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           APPLICANT: Skatrud, Paul
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      STRANDEDNESS: single
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1336 GCGGAGTTA 1344
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      CORRESPONDENCE ADDRESS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              CLASSIFICATION: 435
                                                                                                                                                                                                                                                                                                                                                                                                                                                                          445 GluGluLeu 447
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       nucleic acid
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            MOLECULE TYPE: MRNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   NUMBER OF SEQUENCES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         linear
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           HYPOTHETICAL:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               FILING DATE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             TOPOLOGY:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 US-08-665-435A-3
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              COUNTRY:
                                     326
                                     ò
                                                                        d
                                                                                                             ö
                                                                                                                                          셤
                                                                                                                                                                                  à
                                                                                                                                                                                                                      셤
                                                                                                                                                                                                                                                        à
                                                                                                                                                                                                                                                                                        qq
                                                                                                                                                                                                                                                                                                                              ò
                                                                                                                                                                                                                                                                                                                                                              g
                                                                                                                                                                                                                                                                                                                                                                                                    ŏ
                                                                                                                                                                                                                                                                                                                                                                                                                                        셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          LeualaHisArgCysGlnTrpValArgGluArgGlnGlyValSerTyrTyrAspAspSer 325
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              193 AspGlyMetAlaAspTyrHisLeuAlaLysHisArgIle-----PheArgGlyAla 209
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                651
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    228
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         229 -----ValProCysTrpSerPheGlyLeuAsnLysProAspPheLysAlaPheGly 245
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               712 GCCACTGTTGTACCATTTTCAACA------CTTGAAAAGGTTGAT--------GGA 753
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    246 LeuIleGluGluAspGlyGlnLysTrpLeuAlaPheGlnPheAspLysLeuLeuProVal 265
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            266 GlyGluLeuLysIleArgGlyAlaHisAsnTyrSerAsnAlaLeuAlaAlaLeuAlaLeu 285
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                867
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    GlyHisAlaValGlyLeuProPheAspAlaMetLeuGlyAlaLeuLysAlaPheSerGly 305
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        927
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                GGGCAACATGGTCTTTTATCAGGGAATATCGGCTATCCTGCCAGTCAGGTTGCTCAAATA 471
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       173 ArgLeuAsnAlaGluValAlaThrValLeuAsnValSerGluAspHisMetAspArgTyr 192
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          807
                                                                                                                                                                                                                                                                                                                                                                                     234
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  135 AspLysArgValAlaValGlyGlyAsnLeuGlyThrProAlaLeuAspLeu-----Leu 152
                                                                                                                                                                                                                           ||| ||| ::: ||| ||| CTCGTTTGTGACAGTAAATGATGGGAAACCTTTCGAG 132
                                                                                                                                                                                                                                                                                                                                                                                                                                            ArgileSerGlyAspileAspLeuPheAlaArgGluAlaLysAlaProileValAlaile 114
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     115 ThrGlySerAsnAlaLysSerThrValThrThrLeuValGlyGluMetAlaValAlaAla 134
                                                                                                                                                                                                                                                                                                             GACAATCCAGCTGCCCAAAGTTTGCTGGAA------GAAGGGATCAAGGTCATTACA 183
                                                                                                                                                                                                                                                                                                                                                                                                                       94
                                                                                                                                                                                                                                                                                                                                               GlyGlu-------LeuAspAlaGluPheLeuCysSerAlaArgGluLeuTyr 74
                                                                                                                              7 AspHisPheArg------IleValValGlyLeuGlyLysSerGlyMetSerLeu 22
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              592 GGGTCATITICTGAATATGTAGCAGCCAAGTGGAATATCCAGAACAAGATGACAGCT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    210 ArgGlnValValValAsnArgAlaAspAlaLeuThrArgProLeuIleAlaAspThr---
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      754 GCTTATCTGGAAGATGGTCAA-----CTCTACTTCCGTGGTGAAGTAGTCATGGCAGCG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              808 AATGAAATCGGTGTTCCAGGTAGCCACAATGTGGAAAATGCCCTTGCGACTATTGCTGTA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      868 GCCAAGCTTCGTGATGTGGACAATCAAACCATCAAGGAAACTCTTTCAGCCTTCGGTGGT
                                                                                                                                                               GATCAATTTAAAAATAAGAAAGTTCTTGTTTTAGGTTTGGCCAAGTCTGGTGAATCTGCA
                                                                                                                                                                                                                                                                           GluAsnProProGluLeuAlaThrLeuArgAlaGlnTyrProGlnValGluValArgCys
                                                                                                                                                                                                                                                                                                                                                                                   84 GGIGGCCATCCTTIGGAACTCTIGGAIGAAGAGTTIGCCCTTAIGGIGAAA-----
                                                                                                                                                                                                                                                                                                                                                                                                                       ValSerProGlyLeuSerLeuArgThrProAlaLeuValGlnAlaAlaLysGlyVal
                                                                                                                                                                                                     23 ValArgTyrLeuAlaArgArgGlyLeuProPheAlaValValAspThrArg------
   Conservative:
                                                                                          US-09-701-229-2 (1-448) x US-08-665-435A-1 (1-1350)
                    Mismatches:
Indels:
 52.92%
34.99%
25.95%
Percent Similarity:
Best Local Similarity:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    286
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              306
                                                                                                                                                                                                                                                                                                             133
                                                                                                                                                                                                                                                                                                                                                                                                                       75
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             95
                                                                                                                                                                 13
                                                                                                                                                                                                                                                                           40
                                                                                                                                                                                                                                                                                                                                                 9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             412
                                    Query Match:
                                                                                                                                                                                                                                                                                                                                                                                                                                                       셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ŏ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ద
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  οy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      a
```

```
8
                                             ö
                                                                   g
                                                                                          ò
                                                                                                              g
                                                                                                                                       à
                                                                                                                                                           g
                                                                                                                                                                                  ò
                                                                                                                                                                                                       ద
                                                                                                                                                                                                                                                  a
                                                                                                                                                                                                                                                                         ò
                                                                                                                                                                                                                                                                                               g
                                                                                                                                                                                                                                                                                                                                            硆
                                                                                                                                                                                                                               å
                                                                                                                                                                                                                                                                                                                     ò
                                                                                                                                                                                                                                                                                                                                                                  á
                                                                                                                                                                                                                                                     73 GCUCGUUUGUUGGACAAGCUAGGUGCCAUUGUGACAGUAAAUGAUGGGAAACCUUUCGAG 132
                                                                                                                                                                                                                                                                                                                                                                          95 ArgileSerGlyAspIleAspLeuPheAlaArgGluAlaLysAlaProIleValAlaIle 114
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             153 AlaAspAspIleGluLeuTyrValLeuGluLeuSerSerPheGlnLeuGluThrCysAsp 172
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        173 ArgLeuAsnAlaGluValAlaThrValLeuAsnValSerGluAspHisMetAspArgTyr 192
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         209
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                245
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       753
                                                                                                                                                                                                                                                                                                                                                    235 ---AAUCCAGGUAUCCCCUACAACAAUCCCAUGAUGAAAAGGCUUUGGCCAAGAGAAUU 291
                                                                                                                                                                                                                                                                                                                                                                                          292 CCAGUCUUGACUGAGGGGGAAUUGGCUUAUUGAUUGAUUCAGAAGCACCGAUUAUUGGGAUC 351
                                                                                                                                                                                                                                                                                                                                                                                                                    115 ThrGlySerAsnAlaLysSerThrValThrThrLeuValGlyGluMetAlaValAlaAla 134
                                                                                                                                                                                                                                                                                                                                                                                                                                  135 AspLysArgValAlaValGlyGlyAsnLeuGlyThrProAlaLeuAspLeu----Leu 152
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                591
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              651
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                246 LeulleGluGluAspGlyGlnLysTrpLeuAlaPheGlnPheAspLysLeuLeuProVal 265
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    807
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      266 GlyGluLeuLysIleArgGlyAlaHisAsnTyrSerAsnAlaLeuAlaAlaLeuAlaLeu 285
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    75 ValSerProGlyLeuSerLeuArgThrProAlaLeuValGlnAlaAlaAlaLysGlyVal 94
                                                                                                                                                                                                                                                                                                 7 AspHisPheArg------IleValValGlyLeuGlyLysSerGlyMetSerLeu
                                                                                                                                                                                                                                      GluAsnProProGluLeuAlaThrLeuArgAlaGlnTyrProGlnValGluValArgCys
                                                                                                                                                                                                                                                                                  GlyGlu------LeuAspAlaGluPheLeuCysSerAlaArgGluLeuTyr
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         193 AspGlyMetAlaAspTyrHisLeuAlaLysHisArgIle-----PheArgGlyAla
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       592 GGGUCAUUUUCUGAAUAUGUAGCAAGUGGAAUAUCCAGAACAAGAUGACAGCU
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            210 ArgGlnValValValAsnArgAlaAspAlaLeuThrArgProLeuIleAlaAspThr---
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               -----ValProCysTrpSerPheGlyLeuAsnLysProAspPheLysAlaPheGly
                                                                                                                                                                                           23 ValArgTyrLeuAlaArgArgGlyLeuProPheAlaValValAspThrArg----
                                           1350
162
83
177
41
                                                                   Conservative:
Mismatches:
                                                                                                                         US-09-701-229-2 (1-448) x US-08-665-435A-3 (1-1350)
                                                      Matches:
                                                                                          Indels:
                                              Length:
                                          1.86e-55
586.50
52.928
34.998
25.958
                                                      Score:
Percent Similarity:
Best Local Similarity:
 ջ
                                Alignment Scores:
: ANTI-SENSE: 
JS-08-665-435A-3
                                                                                                                                                                                                                                       40
                                                                                                                                                                                                                                                                                   9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              229
                                                                                       Query Match:
                                           Pred. No.:
                                                                                                                                                                    g
                                                                                                                                                                                                                                                                                                                                                                                            윱
                                                                                                                                               ð
                                                                                                                                                                                           å
                                                                                                                                                                                                                셤
                                                                                                                                                                                                                                     ò
                                                                                                                                                                                                                                                           g
                                                                                                                                                                                                                                                                                  ŏ
                                                                                                                                                                                                                                                                                                   a
                                                                                                                                                                                                                                                                                                                            ò
                                                                                                                                                                                                                                                                                                                                                   쉽
                                                                                                                                                                                                                                                                                                                                                                          ô
                                                                                                                                                                                                                                                                                                                                                                                                                     à
                                                                                                                                                                                                                                                                                                                                                                                                                                       a
                                                                                                                                                                                                                                                                                                                                                                                                                                                           ó
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    쉽
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        õ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     õ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ð
```

```
(196 GUGCCAGACAUUACUGGACUCAAGAAGAUGGUCAUCCUGGGUCAAUCUGCAGAAACGUGUC 1155
                                                                                                                                                                                                                                                                                                                                                                                                                                                                              385
                                                                                                                                                                                                                                                                                                                                                                                                                                                  404
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        424
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               444
                                                                                      325
                                                                                                                                                                               326 LysAlaThrAsnValGlyAlaAlaLeuAlaAlaIleGluGlyLeuGlyAlaAspIleAsp 345
                                                                                                                                                                                                                                                                     346 GlyLysLeuValLeuLeuAlaGlyGlyAspGlyLysGlyAlaAspPheH1sAspLeuArg 365
                                          927
                                                                                                                pneumoniae
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      405 ValArgGlnAlaAlaGluLeuAlaArgGluGlyAspAlaValLeuLeuSerProAlaCys
286 GlyHisAlaValGlyLeuProPheAspAlaMetLeuGlyAlaLeuLysAlaPheSerGly
                                          GCCAAGCUUCGUGAUGUGGACAAUCAAACCAUCAAGGAAACUCUUUCAGCCUUCGGUGGU
                                                                                        LeuAlaHisArgCysGlnTrpValArgGluArgGlnGlyValSerTyrAspAspSer
                                                                                                                                                                                                                                                                                                                                                           366 GluProvalAlaArgPheCysArgAlaValValLeuLeuGlyArgAspAlaGlyLeuIle
                                                                                                                                                                                                                                                                                                                                                                                                                                                  386 AlaGlnAlaLeuGlyAsnAla -- - ValProLeuValArgValAlaThrLeuAspGluAla
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               425 AlaSerLeuAspMetPheLysAsnPheGluGluArgGlyArgLeuPheAlaLysAlaVal
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             GENERAL INFORMATION:
APPLICANT: Skatrud, Paul
APPLICANT: Poerry, Robert
APPLICANT: Hoskins, John
APPLICANT: Wu, Chyun-Yeh Earnest
TITLE OF INVENTION: Blosynthetic Gene Mur D of Streptococcus
NUMBER OF SOUGNES: 3
CORRESPONDENCE ADDRESS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    MEDIUM TYPE: Floppy disk
COMPUTER: IBM PC COMPATIBLE
OPERATIS: SYSTEM: PC-DOS/MS-DOS
SOFTWARE: Patentin Release #1.0, Version #1.30
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             APPLICATION NUMBER: US/08/843,309 FILING DATE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ADDRESSEE: Eli Lilly and Company
STREET: Lilly Corporate Center
CITY: Indianapolis
STATE: Indiana
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Sequence 3, Application US/08843309
Patent No. 5834270
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ATTORNEY/AGENT INFORMATION:
NAME: Webster, Thomas D
REGISTRATION NUMBER: 39,872
REFERENCE/DOCKET NUMBER: X-991
TELECOMMUNICATION INFORMATION:
TELEPHONE: 317-276-3334
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      TELEFAX: 317-276-3861
INFORMATION FOR SEQ ID NO: 3:
SEQUENCE CHARACTERISTICS:
LENGTH: 1350 base palxs
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             CURRENT APPLICATION DATA:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    317-276-3861
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 COMPUTER READABLE FORM:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 CLASSIFICATION: 435
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       445 GluGluLeu 447
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     COUNTRY:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                RESULT 14
US-08-843-309-3
                                            898
                                                                                        306
```

```
GenCore version 5.1.6
Copyright (c) 1993 - 2003 Compugen Ltd
```

using sw model OM nucleic - nucleic search,

August 14, 2003, 01:45:04; Search time 113 Seconds (without alignments) 5663.766 Million cell updates/sec

Perfect score:

Sequence:

IDENTITY\_NUC Gapop 10.0 , Gapext 1.0 Scoring table:

569978 seqs, 220691566 residues Searched:

Total number of hits satisfying chosen parameters:

Minimum DB seq length: 0 Maximum DB seq length: 200000000

Post-processing: Minimum Match 0% Maximum Match 100% Listing first 45 summaries

Database :

Issued\_Patents\_NA:\*

/cgn2\_6/ptodata/1/ina/5A\_COMB.seq:\*
/cgn2\_6/ptodata/1/ina/5B\_COMB.seq:\*
/cgn2\_6/ptodata/1/ina/6A\_COMB.seq:\*
/cgn2\_6/ptodata/1/ina/6B\_COMB.seq:\*
/cgn2\_6/ptodata/1/ina/PcTUS\_COMB.seq:\*
/cgn2\_6/ptodata/1/ina/PcTUS\_COMB.seq:\*

Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

		Description	Sequence 7861, Ap	7702,	7787,			7624,		1, Ap	7	Sequence 1, Appli	1,	7929	-	13,	13,	13,	Sequence 13, Appl	7,	٦,	218		227,	8206,	8096,	7860,	21, Ag	11,
SUMMARIES		ei .	9-252-991A-78	991A-7	US-09-252-991A-7787	-252-991A-7	US-09-252-991A-7552 /	US-09-252-991A-7624	US-09-328-352-1282	US-09-103-840A-1	US-09-103-840A-2	US-09-557-884-1	US-09-643-990A-1	US-09-252-991A-7929	US-08-920-812-13	-08-920-827	US-08-921-177-13	US-08-362-577C-13	-08-920	-08-804-	-804-	-252-	US-09-252-991A-194	US-09-252-991A-227	-252	US-09-252-991A-8096	US-09-252-991A-7860	-320	US-09-141-908-11
		8	4	4	4	4	4	4	۲	m -	m	7	7	4	Н	Н	-	-	•	• •	~	7	4	7	4	4	4	m	4
	ļ	Length DB	1401	1371	567	564	360	1359	1416	4411529	4403765	1830121	1830121	1170	9515	9515	9515	9515	9515	44377	44377	2325	2784	2946	1335	1386	1287	5970	5970
ď	Ouery	Match	95.2		39.1		24.4	17.8	16.5	12.0	σ	m	m	٠	5.2	5.2	5.2	5.2	5.2	5.1	5.1	4.4	4.4	4.4	4.3	4.3	4.3	4.3	4.3
	1	Score	1380.6	1364.6	267		353.6	258	239	173.8	172.2	49	149.8	2	9/	92	9/	92	92	73.6	73.6	63.2	63.2	63.2	ď	•	62	62	62
	ilt	No.	т	7	٣	4	Ŋ	d	7	ω	σ	10	1	12	13	14	12	16	11	18	13	20	21	22	23	24	22	56	27
	Result	- :	ပ		O	บ			`	O	υ			ပ									ပ			υ	O	ပ	υ

Sequence 21, Appl	Sequence 11306, A	Sequence 7, Appli	Sequence 3, Appli	Patent No. 5215881	Sequence 1, Appli	Sequence 3933, Ap		Sequence 1, Appli		Sequence 3, Appli	٠.		Sequence 49, Appl	Sequence 76, Appl	Sequence 14544, A	Sequence 14820, A	Sequence 13134, A
US-09-657-440-21	US-09-252-991A-11306	US-09-105-537-7	US-09-105-537-3	5215881-2	US-07-945-283-1	US-09-252-991A-3933	US-09-252-991A-4006	US-09-105-537-1	US-08-934-481-3	US-09-290-602-3	US-08-934-481-1	US-09-290-602-1	US-09-266-965-49	US-09-266-965-76	US-09-252-991A-14544	US-09-252-991A-14820	US-09-252-991A-13134
7	4	ო	٣	9	Н	4	4	٣	~	4	~	4	4	4	4	4	4
5970	1224	1248	13613	2721	8438	1452	4284	15872	801	801	2193	2193	1545	53500	1554	1761	1050
4.3	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.0	4.0	4.0
62	61.4	8.09	8.09	9.09	9.09	60.2	60.2	59.6	29	59	59	29	58.8	58.8	58.6	58.6	28
28	58	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
υ			υ	υ	υ	υ										U	

## ALIGNMENTS

```
APPLICANT: Marc J. Rubenfield et al. TITLE OF INVENTION: NUCLEIC ACID AMINO ACID SEQUENCES RELATING TO PSEUDOMONAS TITLE OF INVENTION: AERUGINOSA FOR DIAGNOSTICS AND THERAPEUTICS FILE REFERENCE: 107196.136
                                                                                                                                                                                                                                                                                                                                                                                                                                   1328
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   1208
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    1148
                                                                                                                                                                                                                                                                                                                                                                   ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   1268
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      1088
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      1087 CGCGCTGGTACAGGCCGCCGCAAAGGTGTGCCCATCTCCGGTGACATCGTTCGC 1028
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     301
                                                                                                                                                                                                                                                                                                                                                                                                                                                                    121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     241
                                                                                                                                                                                                                                                                                                                                                                                                    61
                                                                                                                                                                                                                                                                                                                                                                                                                     62 GCCTCCGACCACTTCCGCATCGTTGTCGGCCTCGGCAAGAGCGGCATGTCCCTGGTGCG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     1327 GGCTCCGGACCATTCCGCATCGTTGTCGGCCTCGGCAAGAGCGGCATGTCCCTGGTGCG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     122 CTACCTGGCGCGCGCGCGGCTTGCCTTTCGCCGTGGTCGATACCCGAGAGAACCCGCGGGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        242 CGAGTTCCTCTGCTCCGCCGCGGAACTCTATGTCAGCCCCGGCTTGTCGCTGCGCACCCC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          302 TGCGCTGGTACAGGCCGCCGCGAAAGGCGTGCGCATCTCCGGTGACATCGATCTTTGGC
                                                                                                                                                                                                                                                                                                                                                                     Gaps
                                                                                                                                                                                                                                                                                                                                                                                                    182 GCTGGCCACCCTGCGTGCCCAGTATCCGCAGGTGGAAGTGCGTTGCGGCGAACTCGACGC
                                                                                                                                                                                                                                                                                                                               Length 1401;
                                                                                                                                                                                                                                                                                                                                                                   ö
                                                                                                                                                                                                                                                                                                                                                                   Indels
                                                                                                                                                                                                                                                                                                                                 Score 1380.6; DB 4
Pred. No. 9.4e-252;
0; Mismatches 4;
                                                                                                            CURRENT APPLICATION NUMBER: US/09/252,991A
CURRENT FILING DATE: 1999-02-18
FRIOR APPLICATION NUMBER: US 60/074,788
PRIOR FILING DATE: 1998-02-18
PRIOR FILING DATE: 1998-07-27
NUMBER: OF SEQ ID NOS: 33142
LENGTH: 1401
Sequence 7861, Application US/09252991A Patent No. 6551795
                                                                                                                                                                                                                                                                                  ; ORGANISM: Pseudomonas aeruginosa US-09-252-991A-7861
                                                                                                                                                                                                                                                                                                                               95.2%;
                                                                                                                                                                                                                                                                                                                                                                 Matches 1383; Conservative
                                                                                                                                                                                                                                                                                                                                  Query Match
Best Local Similarity
                                  GENERAL INFORMATION: APPLICANT: Marc J.
                                                                                                                                                                                                                                                                                                                                                                                                                                   g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   පු
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   d
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ò
```

```
PSEUDOMONAS
                                                                                                                                                                                                                                                                                146
                                                                                                                                                                                                                                                                                                                    206
                                                                                                                                                                                                                                                                                                                                                        266
                                                                                                                                                                                                                                                                                                                                                                                                             300
                                                                                                                                                                                                                                                                                                                                                                                                                                386
                                                                                                                                                                                                                                                                                                                                                                                                                                                 360
                                                                                                                                                                                                                                                                                                                                                                                                                                                                    446
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         480
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      506
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           999
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              540
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               626
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  900
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       999
                                                                                                                                                                                                                                                             9
              Sequence 7702, Application US/09252991A

Patent No. 6551795
GENERAL INPRAMATION:
FARETHEANT: Marc J. Rubenfield et al.
TITLE OF INVENTION:
TITLE OF INVENTION: NUCLEIC ACID AND AMINO ACID SEQUENCES RELATING TO PR.
TITLE OF INVENTION: AERUGINOSA FOR DIAGNOSTICS AND THERAPEUTICS
TITLE OF INVENTION: ABRUGINOSA FOR DIAGNOSTICS AND THERAPEUTICS
CURRENT APPLICATION NUMBER: US/09/252,991A
CURRENT FILING DATE: 1999-02-18
PRIOR FILING DATE: 1998-02-18
PRIOR PELICATION NUMBER: US 60/074,788
PRIOR FILING DATE: 1998-02-18
PRIOR FILING DATE: 1998-02-18
PRIOR FILING DATE: 1998-07-27
NUMBER OF SEQ ID NOS: 33142
                                                                                                                                                                                                                                                                              TTCGCCGTGGTCGATACCCGAGAGAACCCGCGGAGCTGGCCACCTGCGTGCCCAGTAT
                                                                                                                                                                                                                                                                                                                              CTCTATGTCAGCCCCGGCTTGTCGCTGCGCACCCCTGCGCTGGTACAGGCCGCGCGAAA
                                                                                                                                                                                                                                                                                                                                                                                                                               GCCGCGGACAAAGCGTGTCGCCGTCGGCGGCAACCTCGGCACCCCGGCGCTCGACCTGCTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ဥ
                                                                                                                                                                                                                                            AGCTGCGTTGAGGACGAAGAGAGCATGAGCCTGATCGCCTCCGACCACTTCCGCATCGTT
                                                                                                                                                                                                                                                       GCCGACGACATCGAGCTGTACGTGTTGGAGCTGTCGAGCTTCCAGCTGGAAACCTGCGAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     GCCGACGACATCGAGCTGTACGTTGGAGCTGTCGAGCTTCCAGCTGGAAACCTGCGAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          CGCCTCAACGCCGAGGTGGCGGCCGTGCTGAACGTCAGCGAAGACCATATGGATGCGTAC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       GCCGCGGACAAGCGTGTCGCCGTCGGCGCAACCTCGGCACCCCGGCGCGCTCGACCTGCTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                CGCCTCAACGCCGAGGTGGCGACCGTGCTGAACGTCAGCGAAGACCATATGGATCGCTAC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     GACGGCATGGCTGACTACCACCTGGCCAAGCACCGGATCTTCCGCGGGTGCCCGCCAGGTC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Length 1371
                                                                                                                                                                                                                           ö
                                                                                                                                                                                                                           Indels
                                                                                                                                                                                                        Score 1364.6; DB 4;
Pred. No. 9.6e-249;
0; Mismatches 4;
                                                                                                                                                                              : Pseudomonas aeruginosa
                                                                                                                                                                                                      oilarity 99.7%;
Conservative 0
                                                                                                                                                                                                                Best Local Similarity
Matches 1367; Conserv
                                                                                                                                                                               ; ORGANISM: Pseudo
US-09-252-991A-7702
          US-09-252-991A-7702
                                                                                                                                                                    TYPE: DNA ORGANISM:
                                                                                                                                                                                                                                                             H
                                                                                                                                                                                                                                            27
                                                                                                                                                                                                                                                                                                                                     121
                                                                                                                                                                                                                                                                                87
                                                                                                                                                                                                                                                                                                  61
                                                                                                                                                                                                                                                                                                                   147
                                                                                                                                                                                                                                                                                                                                                        207
                                                                                                                                                                                                                                                                                                                                                                         181
                                                                                                                                                                                                                                                                                                                                                                                            267
                                                                                                                                                                                                                                                                                                                                                                                                             241
                                                                                                                                                                                                                                                                                                                                                                                                                                                 301
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     361
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         421
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           507
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                267
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  541
                                                                                                                                                                                                         Match
                                                                                                                                                                                                                                                                                                                                                                                                                                327
                                                                                                                                                                                                                                                                                                                                                                                                                                                                    387
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       447
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              481
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    627
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      601
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        687
                                                                                                                                                             LENGTH
                                                                                                                                                                                                                                                           ga. Võ
                                                                                                                                                                                                                                                                                                 a
                                                                                                                                                                                                                                                                                                                                  g
                                                                                                                                                                                                                                                                                                                                                        ð
                                                                                                                                                                                                                                                                                                                                                                     g
                                                                                                                                                                                                                                                                                                                                                                                                        g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    셤
                                                                                                                                                                                                                                             å
                                                                                                                                                                                                                                                                                                                  ò
                                                                                                                                                                                                                                                                                                                                                                                     õ
                                                                                                                                                                                                                                                                                                                                                                                                                               ò
                                                                                                                                                                                                                                                                                                                                                                                                                                             g
                                                                                                                                                                                                                                                                                                                                                                                                                                                               δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  용
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          임
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                 1141
                                                                                                                                                                                                                                                                                                                                                                        1021
                                                                                                                                                                                                                                                                                                                                                                                                             1081
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  1321
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  1381
                   968
                                                        908
                                                                                            848
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       GATTGCCCAGGCACTGGGCAACGCGGTACCGCTGGTGCGCGTCGCACGCTGGACGAAGC 1261
 421
                                     481
                                                                          541
                                                                                                                                788
                                                                                                                                                                   728
                                                                                                                                                                                                      899
                                                                                                                                                                                                                         781
                                                                                                                                                                                                                                           608
                                                                                                                                                                                                                                                                               548
                                                                                                                                                                                                                                                                                                                                                                                           368
                                                                                                                                                                                                                                                                                                                                                                                                                                                                   248
                                                                                                             601
                                                                                                                                                  661
                                                                                                                                                                                      721
                                                                                                                                                                                                                                                              841
                                                                                                                                                                                                                                                                                                                   488
                                                                                                                                                                                                                                                                                                                                     961
                                                                                                                                                                                                                                                                                                                                                       428
                                                                                                                                                                                                                                                                                                                                                                                                                               308
                                                                                                                                                                                                                                                                                                 901
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           128
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              89
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   æ
                                                                                                                                                                                                                                                                                                                                                                                                                                              CGACGGCAAGCTGGTGCTCCCCGCCGGACACGGCAAGGCCCCATTTCCATGACT
         CAGCGAAGACCATATGGATCGCTACGACGGCATGGCTGACTACCACCTGGCCAAGCACCG
CCGCGAGGCGAAGGCCCCCGATCGTCGCCATCACCGGTTCCAACGCGAAGAGCACCGTGAC
                                              GGTTGGCGAACTGAAGATCCGTGGCGCCCAAACTATTCCAACGCGCTCGCCGCGCTGGC
                                                                                                                                                                                                                                                                                                                                   TTCCAAGGCCACCAACGTCGGCGCCCCTGGCGGCGATCGAGGGGGCTGGGTGCCGACAT
                                                                                                                                                                                                                                                                                                                                                                                                                     CACCCTGGTGGGCGAAATGGCGGTGGCCGCGGACAAGCGTGTCGCCGTCGGCGGCAACCT
                                                                         CGGCACCCCGGCGCTCGACCTGCTGGCCGACATCGAGCTGTACGTGTTGGAGCTGTC
                                                                                                                                                                                                                                                            CGGCCTGATCGAGGAAGACGGCCAGAAGTGGCTGGCGTTCCAGTTCGACAAGCTGCCC
                                                                                                                                                                                                                                                                    GCTGGGCCATGCGGTCGGCCTGCCGTTCGACGCCATGCTCGGCGCGCTGAAGGCGTTTTC
                                                                                                                                                                                                                                                                                                                                                                       CGCCTGGCTCATCGCTGCCAGTGGGTACGCGAGGGGCAGGGCGTGAGCTACTACGACGA
                                                                                                                                                                                    GATCTTCCGCGGTGCCCGCCAGGTCGTGAATCGCGCCGATGCCCTGACCCGACCGCT
                                                                                                                                                                                                                         GATCGCCGATACCGTGCCGTGCTCGTTCGGCCTGAACAAGCCGGACTTCAAGGCTTT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         GATTGCCCAGGCACTGGCCAACGCGGTACCGCTGGTGCGCGCTCGCAACGCTGGACGAAGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           AGTCCGGCAGGCCGCGAGCTGGCCCGCGAAGGCGATGCGGTGCTGTTGTCGCCGGCCTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     CGCGAGCCTGGACATGTTCAAGAACTTCGAAGAACGCGGGACGCCTGTTCGCCAAAGCCGT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         AGAGGAG 1388
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                AGAGGAG
                                                                                                                                                                                                                                                                                                                                                                                                                             367
                 1027
                                   422
                                                                                                                            847
                                                                                                                                                                                                                                                                                                                                                                                                           1022
                                                                                                                                                                                                                                                                                                                                                                                                                                               1082
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    1142
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    1382
362
                                                      196
                                                                        482
                                                                                           907
                                                                                                             542
                                                                                                                                                602
                                                                                                                                                                                   662
                                                                                                                                                                                                                        722
                                                                                                                                                                                                                                                            782
                                                                                                                                                                                                                                                                                                                 547
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1202
                                                                                                                                                                 787
                                                                                                                                                                                                     727
                                                                                                                                                                                                                                         667
                                                                                                                                                                                                                                                                              607
                                                                                                                                                                                                                                                                                                 842
                                                                                                                                                                                                                                                                                                                                   902
                                                                                                                                                                                                                                                                                                                                                     487
                                                                                                                                                                                                                                                                                                                                                                      962
                                                                                                                                                                                                                                                                                                                                                                                         427
                                                                                                                                                                                                                                                                                                                                                                                                                                                                  307
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            1262
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                1322
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         187
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            127
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 67
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ^
                셤
                                                                                                                                                                                                                                      g
                                                                                                                                                                                                                                                        ò
                                                                                                                                                                                                                                                                            엄
                                                                                                                                                                                                                                                                                                              g
à
                                   õ
                                                  g
                                                                      ò
                                                                                        q
                                                                                                            ç
                                                                                                                            g
                                                                                                                                               ò
                                                                                                                                                                a
                                                                                                                                                                                 ò
                                                                                                                                                                                                  g
                                                                                                                                                                                                                      ģ
                                                                                                                                                                                                                                                                                               ò
                                                                                                                                                                                                                                                                                                                                   ò
                                                                                                                                                                                                                                                                                                                                                    셤
                                                                                                                                                                                                                                                                                                                                                                    ò
                                                                                                                                                                                                                                                                                                                                                                                       g
                                                                                                                                                                                                                                                                                                                                                                                                          à
                                                                                                                                                                                                                                                                                                                                                                                                                          a
                                                                                                                                                                                                                                                                                                                                                                                                                                              à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ò
```

셤

ö

 $\boldsymbol{\omega}$ 

```
Sequence 7928, Application US/09252991A
Patent No. 6521795
GENERAL INFORMATION:
TITLE OF INVENTION: NUCLEIC ACID AND AMINO ACID SEQUENCES RELATING TO PSEUDOMONAS
TITLE OF INVENTION: AERGINOSA FOR DIAGNOSTICS AND THERAPEUTICS
TITLE OF INVENTION: AERGINOSA FOR DIAGNOSTICS AND THERAPEUTICS
FILE REFERENCE: 107196.136
CURRENT FILING DATE: 1999-02-18
PRIOR APPLICATION NUMBER: US 60/074,788
PRIOR APPLICATION NUMBER: US 60/074,788
PRIOR PAPLICATION NUMBER: US 60/094,190
PRIOR FILING DATE: 1998-02-18
PRIOR PRIOR FILING DATE: 1998-07-27
NUMBER OF SEQ ID NOS: 33142
SEQ ID NO 7928
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   1072
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         1132
                                                                                                                                                    1011
                                                                                                                                                                                                          1071
                                                                                                                                                                                                                                                                 1131
                                                                                                                                                                                                                                                                                                                       1191
                                                                                                                                                                                                                                                                                          208
                                                                                                                                                                                                                                                                                                                                                                             1192 ACGCCGGGCTGATTGCCCAGGCACTGGGCAACGCGGTACCGCTGGTGCGCGCTCGTACGC 1251
                                                                                                                                                                                                                                                                                                                                                                                                                                      TGGACGAAGCAGTCCGGCAGGCCGCCGAGCTGGCCCGCGAAGGCGATGCGGTGCTGTTGT 1311
                                                                                                                        388
                                                                                                                                                                                                                                                                                                                                      328
                                                                                                                                                                                                                                      268
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              505
448
                                                                                              951
                                        891
                                                                                                                                                                                                                                                                                                                                                                                                         88
                                                                                                                                                                                                                                                                                                                                                                                                                                                    CCGCGCTGGCGCTGGGGCCATGCGGCCTGCCGTTCGACGCCATGCTCGGCGCGCTGA
                                                                                                                                                   CGGGGTGGCGCTGGGCCATGGGGTCGGCCTGCCGTTCGACGCCATGCTCGGCGCGCGTGA
                                                                                                                                                                                                          ACTACGACGATTCCAAGGCCACCAACGTCGGCGCCCTGGCGGCGGCGATCGAGGGGCTGG
                                                                                                                                                                                                                                      327 ACTACGACGATTCCAAGGCCACCAACGTCGGCGCCGCCCTGGCGGCGATCGAGGGGCTGG
                                                                                                                                                                                                                                                                 GTGCCGACATCGACGCCAAGCTGGTGCTCGCCGGCGGAGAGACGGCAAGGGCGCGATT
                                                                                                                                                                                                                                                                              TCCATGACCTGCGCGGGCCGGTCGCGCGCTTCTGCCGGGCGGTGGTACTGCTTGGCCGTG
                                                                                                                                                                                                                                                                                                                                                                                             1073 TGCCGACATCGACGCAAGCTGGTGCTGCTCGCCGGCGGAGACGCCAAGGGCCGCCGATTT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        AGCTGCTGCCGGTTGGCGAACTGAAGATCCGTGGCGCCCACAACTATTCCAACGCGCTCG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  1013 CTACGACGATTCCAAGGCCACCAACGTCGGCGCCCCTGGCGGCGGATCGAGGGGCTGGG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              564 CTACGACGATTCCAAGGCCAACGTCGGCGCCCCCTGGCGGCGATCGAGGGGCTGGG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Length 564;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Query Match 30.2%; Score 438; DB 4; I
Best Local Similarity 100.0%; Pred. No. 2.4e-74;
Matches 438; Conservative 0; Mismatches 0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            CGCCGGCCTGCGCGAGCCTGGACATGT 1338
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          CGCCGGCCTGCGCGAGCCTGGACATGT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Pseudomonas aeruginosa
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            US-09-252-991A-7928/c
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  US-09-252-991A-7928
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     TYPE: DNA ORGANISM: 1
                                                                                                                                                                                                          1012
                                                                                                                                                                                                                                                                1072
                                                                                                                                                                                                                                                                                                                       1132
                                                                                                                                                                                                                                                                                                                                                                                                                                    1252
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          1312
             267
                                        832
                                                                    207
                                                                                             892
                                                                                                                        447
                                                                                                                                                    952
                                                                                                                                                                              387
                                                                                                                                                                                                                                                                                          267
                                                                                                                                                                                                                                                                                                                                                 207
                                                                                                                                                                                                                                                                                                                                                                                                                                                               83
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      27
                                        δŏ
                                                                셤
                                                                                             ò
                                                                                                                       셤
                                                                                                                                                    ò
                                                                                                                                                                          g
                                                                                                                                                                                                          ò
                                                                                                                                                                                                                                   a
                                                                                                                                                                                                                                                                δ
                                                                                                                                                                                                                                                                                       g
                                                                                                                                                                                                                                                                                                                      Qγ
                                                                                                                                                                                                                                                                                                                                                 g
                                                                                                                                                                                                                                                                                                                                                                             ò
                                                                                                                                                                                                                                                                                                                                                                                                      οp
                                                                                                                                                                                                                                                                                                                                                                                                                                    à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    엄
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     õ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                GENERAL INFORMATION:
APPLICANT: Marc J. Rubenfield et al.
APPLICANT: Marc J. Rubenfield et al.
TITLE OF INVENTION: NUCLEIC ACID AND AMINO ACID SEQUENCES RELATING TO PSEUDOMONAS TITLE OF INVENTION: AERUGINOSA FOR DIAGNOSTICS AND THERAPEUTICS
FILE REFERENCE: 107196.136
CURRENT APPLICATION NUMBER: US/09/252,991A
CURRENT FILING DATE: 1999-02-18
PRIOR FILING DATE: 1998-02-18
PRIOR FILING DATE: 1998-02-18
PRIOR FILING DATE: 1998-07-27
NUMBER OF SEQ ID NOS: 33142
SEQ ID NOS: 33142
                                                                                                                                                                                                                                                                                                                                                                                                                      1046
                                                                                                                                                                                                                                                                1020
                                                                                                                                                                                                                                                                                           1106
                                                                                                                                                                                                                                                                                                                                                 1166
                                                                                                                                                                                                                                                                                                                                                                                                                                                               1286
                                                                                                                                                                                                                                                                                                                                                                                                                                                                            CGCGAAGGCGATGCGGTGCTGTTGTCGCCGGCCTGCGCGGGCCTGGACATGTTCAAGAAC 1346
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ô
                                        780
                                                                                             840
                                                                                                                        926
                                                                                                                                                                              986
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    GCCCTGGCGGCGATCGAGGGCTGGCTGCCGACATCGACGCCAGCTGGTGCTCGCCCCC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  TTCGACGCCATGCTCGCCGCGCTGAAGGCGTTTTCCGGCCTGGCTCATCGCTGCCAGTGG
                                                                                                                                                                                          GTACGCGAGCGCAGGCCGTGAGCTACGACGATTCCAAGGCCACCAACGTCGGCGCC
                                                                                                                                                                                                                                                                                                                    GCCCTGGCGGCGATCGAGGGGCTGCCGACATCGACGGCAAGCTGGTGCTGCTCGCC
                                                                                                                                                                                                                                                                                                                                              GCCGAGACGCCAAAGGCCCCCGATTTCCATGACCTGCGCGGAGCCGGTCGCGCGTTCTGC
                                                                                                                                                                                                                                                                                                                                                                                                       CGGGCGGTGGTACTGCTTGCCCGTGACGCCGGGCTGATTGCCCCAGGCACTGGGCAACGCG
             TCGTTCGGCCTGAACAAGCCGGACTTCAAGGCTTTCGGCCTGATCGAGGAAGACGGCCAG
                                                                                                                       GCCCACAACTATTCCAACGCGCTCGCCGCGCTGGCGCTGGGGCCATGCGGTCGGCCTGCCG
                                                                                                                                                                                                                                                                                                                                                                                                                                                               GTACCGCTGGTGCGCGTCGCACGCTGGACGAGCAGTCCGGCAGGCCGCCGAGCTGGCC
                                                                  AAGTGGCTGGCGTTCCAGTTCGACAAGCTGCTGCCGGTTGGCGAACTGAAGATCCGTGGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          TTCGAAGAACGCGGACGCCTGTTCGCCAAAGCCGTAGAGGAGCTAGCGTGA 1397
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Length 567;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           39.1%; Score 567; DB 4;
100.0%; Pred. No. 1,3e-98;
ive 0; Mismatches 0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ; Sequence 7787, Application US/09252991A ; Patent No. 6551795
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Pseudomonas aeruginosa
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Query Match
Best Local Similarity 100.
Matches 567; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          US-09-252-991A-7787/c
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ; ORGANISM: Pseudr
US-09-252-991A-7787
                                                                                                                                                                                                                                                                                          1047
                                                                                                                                                                                                                                                                                                                   1021
                                                                                                                                                                                                                                                                                                                                              1107
                                                                                                                                                                                                                                                                                                                                                                          1081
                                                                                                                                                                                                                                                                                                                                                                                                      1167
                                                                                                                                                                                                                                                                                                                                                                                                                                 1141
                                                                                                                                                                                                                                                                                                                                                                                                                                                             1227
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         1201
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   1287
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               1261
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          1347
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     1321
           747
                                     721
                                                                 807
                                                                                          781
                                                                                                                       867
                                                                                                                                                 841
                                                                                                                                                                           927
                                                                                                                                                                                                       901
                                                                                                                                                                                                                                   987
                                                                                                                                                                                                                                                              961
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      TYPE DNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         LENGTH:
                                                                                       g
                                                                                                                                           셤
                                                                                                                                                                    ŏ
                                                                                                                                                                                                   Ωp
                                                                                                                                                                                                                                   õ
                                                                                                                                                                                                                                                         g
                                                                                                                                                                                                                                                                                       à
                                                                                                                                                                                                                                                                                                                   셤
                                                                                                                                                                                                                                                                                                                                              ŏ
                                                                                                                                                                                                                                                                                                                                                                    Q
                                                                                                                                                                                                                                                                                                                                                                                                      à
                                                                                                                                                                                                                                                                                                                                                                                                                            염
                                                                                                                                                                                                                                                                                                                                                                                                                                                         ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ద
           δ
                                g
                                                                 à
                                                                                                                     ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   à
```

ö

445

à

```
APPLICANT: MATC J. Rubenfield et al.

TITLE OF INVENTION: NUCLEIC ACID AND AMINO ACID SEQUENCES RELATING TO PSEUDOMONAS
TITLE OF INVENTION: AERUGINOSA FOR DIAGNOSTICS AND THERAPEUTICS
TITLE OF INVENTION: AERUGINOSA FOR DIAGNOSTICS AND THERAPEUTICS
TITLE OF INVENTION: AERUGINOSA FOR DIAGNOSTICS AND THERAPEUTICS
CURRENT PILING DATE: 107196-136
CURRENT PILING DATE: 1099-02-18
PRIOR FILING DATE: 1998-02-18
PRIOR FILING DATE: 1998-07-27
PRIOR APPLICATION NUMBER: US 60/094,190
PRIOR PELING DATE: 1998-07-27
NUMBER OF SEQ ID NOS: 33142
SEQ ID NO 7624
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             APPLICANT: GATY L. Breton et al.
TITLE OF INVENTION: NUCLEIC ACID AND AMINO ACID SEQUENCES RELATING TO ACINETOBACTE
TITLE OF INVENTION: BAUMANII FOR DIAGNOSTICS AND THERAPEUTICS
FILE REFERENCE: GTC99-03PA
CURRENT APPLICATION NUMBER: US/09/328,352
CURRENT APPLICATION DATE: 1999-06-04
NUMBER OF SEQ ID NOS: 8252
SEQ ID NO 1282
1373 CAAAGCCGTAGAGGAGCTAGGGTGATGCTGTCGGTGTTGCGCCCCTTCCCGTCGCCGCTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                61 GGACGAAGCAGTCCGGCAGGCCGCCGAGCTGGCCCCCGCGAAGGCGATGTGTTGTC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                1193 CGCCGGGCTGATTGCCCCAGGCACTGGGCAACGCGGTACCGCTGGTGCGCGTCGCAACGCT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  1 CGCCGGGCTGATTGCCCAGGCACTGGGCAACGCGGTACCGCTGGTGCGCGCTCGCAACGCT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          1253 GGACGAAGCAGTCCGGCAGGCCGCCGAGCTGGCCCGCGAAGGCGATGCGGTGCTGTTGTC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      GCCGGCCTGCGCGAGCCTGGACATGTTCAAGAACTTCGAAGAACGCGGACGCCTGTTCGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        181 CAAAGCCGTAGAGGAGCTAGCGTGATGCTGTCGGTGTTGCGCCCCCTTCCCGTCGCCGCTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 12;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Length 1359;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Length 1416;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   17.8%; Score 258; DB 4; Length 13
100.0%; Pred. No. 1.9e-40;
.ive 0; Mismatches 0; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      16.5%; Score 239; DB 4; Length 14 illarity 51.6%; Pred. No. 7.3e-37; Conservative 0; Mismatches 555; Indels
                                                                                    US-09-252-991A-7624
; Sequence 7624, Application US/09252991A
; Patent No. 6551795
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ; Sequence 1282, Application US/09328352; Patent No. 6562958; GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ; TYPE: DNA
; ORGANISM: Acinetobacter baumannii
US-09-328-352-1282
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         1433 TTGAGCCGCCACGCCATC 1450
                                                                                                                                                                                                                                                                                                                                                                                                                       ; TYPE: DNA
; ORGANISM: Pseudomonas aeruginosa
US-09-252-991A-7624
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           241 TTGAGCCGCCACGCCATC 258
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     sal Similarity 100.
258; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Similarity
                                                                                                                                                      GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       US-09-328-352-1282
                                                                                                                                                                                                                                                                                                                                                                                                       LENGTH: 1359
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Best Local Sim
Matches 604;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    1313
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Best Local
Matches 25
                    셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      APPLICANT: Marc J. Rubenfield et al.
APPLICANT: Marc J. Rubenfield et al.
TITLE OF INVENTION: NUCLEIC ACID AND AMINO ACID SEQUENCES RELATING TO PSEUDOMONAS
TITLE OF INVENTION: NUCLEIC ACID AND THERAPEUTICS
FILE REFERENCE: 107196.136
CURRENT APPLICATION NUMBER: US, 60/074,788
PRIOR APPLICATION NUMBER: US, 60/074,788
PRIOR PELING DATE: 1999-02-18
PRIOR FILING DATE: 1999-02-18
PRIOR FILING DATE: 1999-02-18
                                                                                            CGCCGGGCTGATTGCCCAGGCACTGGGCAACGCGGTACCGCTGGTGCGCGTCGCAACGCT 1252
                                                                                                                                                                          1312
                                                                                                                                                                                                                                                  1372
                                                                                                                                                                                                                                                                                                                             1432
                                                                                                                202
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             121 GCTACCTGGCGCGCGCGCGCGTTGCCTTTCGCCGTGGTCGATACCCGAGAAACCCGCGG 180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  61 GCTACCTGGCGCGCGCGCGTTGCCTTTCGCCGTTGTCGATACCCGGAGAACCCGCCGG 120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                240
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                181 CCGAGTICCTCTGCTCCGCCCGCGAACTCTACGTCAGCCCCGGCTTGTCGCTGCGCACCC 240
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          CCGCCTGGTACAGGCCGCCGCGAAAGGTGTGCGCATCTCCGGTGACATCGATCTCTTCG 300
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        CCGAGITCCICICCGCCCGCGCGAACICIAIGICAGCCCCGGCIIGICGCIGCGCACCC 300
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    CTGCGCTGGTACAGGCCGCCGCGAAAGGCGTGCGCATCTCCGGTGACATCGATCTTCG 360
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               361 CCCGCGAGGCGCAAGGCCCCGATCGTCGCCATCACCGGTTCCAACGCGAAGAGCACCGTGA 420
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             9
                124 GGACGAAGCAGTCCGGCAGGCCGCCGCGAGCTGCCCGCGAAGCCGATGCGGTGCTGTTGTC
                                                                                                                                                                                                                                                                       GGACGAAGCAGTCCGGCAGGCCGCCGAGCTGGCCGGAAGGCGATGCGGTGCTGTTGTC
                                                                                                                                                                                                                                              GCCGGCCTGCGCGAGCCTGGACATGTTCAAGAACTTCGAAGAACGCGGACGCCTGTTCGC
                                                                                                                                                                                                                                                                                                                         1373 CAAAGCCGTAGAGGAGCTAGCGTGATGCTGTCGGTGTTGCGCCCCTTCCCGTCGCCGCTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   61 TCGCCTCCGACCACTTCCGCATCGTTGTCGGCCTCGGCAAGAGCGGCATGTCCCTGGTGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          181 AGCTGGCCACCTGCGTGCCCAGTATCCGCAGGTGGAAGTGCGTTGCGGCGAACTCGACG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Length 360;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Score 353.6; DB 4;
Pred. No. 1.8e-58;
0; Mismatches 4;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Sequence 7552, Application US/09252991A Patent No. 6551795
                                                                                                                                                                                                                                                                                                                                                                                                   ; ORGANISM: Pseudomonas aeruginosa
US-09-252-991A-7552
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           24.4%;
98.9%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      NUMBER OF SEQ ID NOS: 33142
SEQ ID NO 7552
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               356; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   US-09-252-991A-7552
                                                                                          1193
                                                                                                                                                                    1253
                                                                                                                                                                                                                                              1313
                                                                                                                                                                                                                                                                                                                                                                                                   1433
                  1133
                                                                                                                              384
                                                                                                                                                                                                                                                                                     264
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Query Match
Best Local (
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  301
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Best Loca
Matches
                ð
                                                  g
                                                                                                                              ద
                                                                                                                                                                                                        셤
                                                                                                                                                                                                                                              ò
                                                                                                                                                                                                                                                                                 g
                                                                                                                                                                                                                                                                                                                                                           g
                                                                                                                                                                                                                                                                                                                                                                                                   ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     QQ
                                                                                            å
                                                                                                                                                                    ð
                                                                                                                                                                                                                                                                                                                         à
                                                                                                                                                                                                                                                                                                                                                                                                                                     셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ğ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               à
```

1252

9

ö

1372

120

```
AAGAACTTCGAAGAACGCGGACGCCTGTTCG
                                                                                                                                                                                                                                                                                                    tuberculosis
                                                                                                             US/09103840A
                                                                                                                                                                                                                                                                                                                                            12.0%;
ilarity 51.7%;
Conservative
                                                                                                                                                                                                                                                                                                ORGANISM: Mycobacterium
; OTHER INFORMATION: H37Rv
US-09-103-840A-1
                                                                                                            Sequence 1, Application Patent No. 6294328
                                                                                                                                                                                                                                                                                                                                                       Best_Local Similarity
Matches 499; Conserv
                                                                                                                                                                                                                                                                             LENGTH: 4411529
                                                                                                   -09-103-840A-1/c
            1300
                                  1341
                                                      1360
                                                                                                                                                                                                                                                                                                                                                                                                                                  333
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      432
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          552
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      612
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                672
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           732
                                                                                                                                                                                                                                                                                                                                              Query Match
            qq
                                 Óγ
                                                  Q
                                                                                                                                                                                                                                                                                                                                                                                                            d
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               셤
                                                                                                                                                                                                                                                                                                                                                                                       à
                                                                                                                                                                                                                                                                                                                                                                                                                                 δŽ
                                                                                                                                                                                                                                                                                                                                                                                                                                                     g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                          δy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          d
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ŏ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ŏ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          δy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     δλ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       CGCGAGCGGCAGGCGTGAGCTACTACGACGATTCCAAGGCCACCAACGTCGGCGCCGCC 1049
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  CTGGCGGCGATCGAGGGCTGGGTGCCGACATCG-----ACGGCAAGCTGGTGCTG 1100
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             1281 CTGGCCCGCGAAGGCGATGCGGTGTTGTTGCCGGCCTGCGCGGAGCCTGGACATGTTC 1340
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         GGCGCAACTAAAATTTTACATGCAGCAACGCTTAAAGAAGCTGTCGAGCTGTGTCAACGT 1299
                                                                                                                                              572
                                                                                                                                                                                                                                                                                                            692
                                                                                                                                                                                                                                                                                                                                                                                                                                            869
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             GACGCCAIGCICGGCGCGCTGAAGGCGTTTTCCGGCCTGGCTCATCGCTGCCAGTGGGTA 989
                                                            280 TTAAGCCCAGGCCTTGCACCACAATTACCGGAAATTCAGGCAGCTATTGCTAAAGGTATT
                                                                                                                                                                                      CAACCAGAGTTACTGGTCCTTGAGTTATCAAGCTTTCAGTTAGAAACCACCTCTCACTTA
                                                                                                                                                                                                                                                                                                                                                                 1221 AACGCGGTACCGCTGGTGCGCGTCGCACGCTGGACGAAGCAGTCCGGCAGGCCGCCGAG
CGCATCTCCGGTGACATCGTTCGCCCGCGAGGCGAAGGCCCCGGATCGTCGCCATC
                                                                                                     340 TCTGTGGGGGGGATATCCAGTTATTGCGCCGTGCCACTGATGTGCCGATTTGTGGGGGATT
                                                                                                                              ACCGGTTCCAACGCGAAGAGCACCGTGACCCTGGTGGGGGGAAATGGCGGGTGGCCGCG
                                                                                                                                                                                                                    GACATCGAGCTGTACGTGTTGGAGCTGTCGAGCTTCCAGCTGGAAACCTGCGATCGCCTC
                                                                                                                                                                                                                                                                           ATGGCTGACTACCACCTGGCCAAGCACCGGATCTTCCGCGGTGCCCGCCAGGTCGTGGTG
                                                                                                                                                                                                                                                                                                                                                                                                          1101 CTCGCCGCGGAGACGCCAAGGGCGCCGATTTCCATGACCTGCGCGAGCCGGTCGCGCG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        GTTAAAACCAGTTTTGGTCAGCTTGATCAAGAATTATTATTACAAGCAGAAGAGATTATT
                                          GTCAGCCCCGGCTTGTCGCTGCGCACCCCTGCGCTGGTACAGGCCGCCGCGAAAGGCCGTG
                                                                                                                                                                          GACAAGCGTGTCGCCGTCGCCGCGCAACCTCGGCACCCCGGCGCTCGACCTGCTGGCCGAC
                                                                                                                                                                                                                                                              AACGCCGAGGTGGCGACCGTGCTGAACGTCAGCGAAGACCATATGGATCGCTACGACGGC
                                                                                                                                                                                                                                                                                                                        AATCGCGCCGATGCCCTGACCCGCTGATCGCCGATACCGTGCCGTGCTGGTCGTTC
                                                                                                                                                                                                                                                                                                                                                                                              GGCCTGAACAAGCCGGACTTCAAGGCTTTCGGC----CTGATCGAGGAAGACGGCCAGAAG
                                                                                                                                                                                                                                                                                                                                                                                                                                        TGGCTGGCGTTCCAGTTCGACAAGCTGCTGCCGGTTGGCGAACTGAAGATCCGTGGCGCC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  CACAACTATTCCAACGCGCTCGCCGCGCTGGCGCTGGGGCCATGCGGTCGGCCTGCCGTTC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           TTCTGCCGGGCGGTGGTACTGCTTGGCCGTGACGCCGGGCTGATTGCCCAGGCACTGGGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           1000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 1050
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1060
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  1120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1161
                                                                                                                              393
                                                                                                                                                    400
                                                                                                                                                                        153
                                                                                                                                                                                                                   513
                                                                                                                                                                                                                                        520
                                                                                                                                                                                                                                                                                    580
                                                                                                                                                                                                                                                                                                         633
                                                                                                                                                                                                                                                                                                                               640
                                                                                                                                                                                                                                                                                                                                                                        200
                                                                                                                                                                                                                                                                                                                                                                                              753
                                                                                                                                                                                                                                                                                                                                                                                                                  260
                                                                                                                                                                                                                                                                                                                                                                                                                                        810
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       880
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             930
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  940
                                                                                                       g
                                                                                                                                                QQ
                                                         셤
                                                                                   οy
                                                                                                                             Q
                                                                                                                                                                       ò
                                                                                                                                                                                        ద
                                                                                                                                                                                                             ŏ
                                                                                                                                                                                                                                    셤
                                                                                                                                                                                                                                                             à
                                                                                                                                                                                                                                                                              g
                                                                                                                                                                                                                                                                                                   QY
Db
                                                                                                                                                                                                                                                                                                                                            Ω
                                                                                                                                                                                                                                                                                                                                                                 g
                                                                                                                                                                                                                                                                                                                                                                                       . Q
                                                                                                                                                                                                                                                                                                                                                                                                                                ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                      g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ద
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       δy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Ω
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      g
```

```
2416000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             2416120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         2416060
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  2415940
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         2415760
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      2415640
ä;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     491
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                611
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         671
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        731
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     848
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        2415879 CTGCACTGGGCGCCGTCGCCCGAGGCCGGCGGGGGGGTCAACATTGCCGAAGAC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     2415819 CACCTGGACTGGCATGCCACGATGCCGAATACACCGCGGCCCAAGGCCCGGGTGCTGACC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  GCCGGGGTAGCGGTGCCCGGGCTGGATGACAGCCGAGCGCCCCCACTGCTGGACGGCTCA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  2415699 CCGGCGCAGGTGCGGTCGGCTTCCGGCGCGGCGGCGCGCGGGGAACTGGGCGTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           2416179 GCCAGTCCCGGCTTCTCGCCCGCAACCCCGCTACTGGCCGCGGCGCGCGGCGGGGGGTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                GGCGAAATGGCGGTGGCCGCGGACAAGCGTGTCGCCGTCGGCGGCAACCTCGGCACCCCG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             2415999 CACGCCATGCTGATCGCCGGTGGCCGCCGCGCTGCTGCGGCAATATCGGCAGTGCG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              273 GTCAGCCCCGGCTTGTCGCTGCGCACCCTGCGTACAGGCCGCCGCGGAAAGGCGTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             -----CGAGGCG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      372 AAGGCCCCGATCGTCGCCATCACCGGTTCCAACGCGAAGAGCACCGTGACCACCTGGTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 GCGCTCGACCTGCTGGCCGACGACATCGAGCTGTACGTGTTGGAGCTGTCGAGCTTCCAG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        GGTGCCCCCCAGGTCGTGGTGAATCGCGCCGATGCCCTGACCCGGACCGCTGATCGCCGAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ACCGTGCCGTGCTGGTCG----TTCGGCCTGAACAAGCCGGACTTCAAGGCTTTCGGCCTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   789 ATCGAGGAAGACGCCCAGAAGTGGCTGGCGTTCCAGTTCGACAAGCTGCTGCCGGTTGGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           CTGGAAACCTGCGATCGCCTCAACGCCGAGGTGGCGACCGTGCTGAACGTCAGCGAAGAC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         CATATGGATCGCTACGACGGCATGGCTGACTACCACCTGGCCAAGCACCGGATCTTCCGC
                                                                                                                                                                                                                                                                                                                                                                                                              STRAIN ANALYSIS IN MYCOBACTERIUM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    39;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             CGCATCTCCGGTGACATCGATCTCTTCGCCCG--------
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    427;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ä,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Score 173.8; DB 3
Pred. No. 2.3e-24;
0; Mismatches 427
                                                                                                 GENERAL INC. 0.294348

GENERAL INCORMATION:
APPLICANT: FLEISCHMAN, ROBERT D.
APPLICANT: FRASER, Owen R.
APPLICANT: FRASER, Claire M.
APPLICANT: VENNER, John C.
TITLE OF INVENTION: DNA SEQUENCES FOR STRAIN
TITLE OF INVENTION: TUBERCULOSIS
FILE REFERENCE: 24366-20007.00
CURRENT APPLICATION NUMBER: US/09/103,840A
CURRENT FILING DATE: 1998-06-24
NUMBER OF SEQ ID NOS: 2
SEQ ID NO 1
```

ဖ

셤

g ð g ò g

셤 ò

ò

g ð g

ò

g

g

ò 요 ò g

ç

ð

```
2414419
                                                                                                                                                                                                                                                                                                                                                                       2414418 GGCGGGGTAGCGGTGGCCGGGCTGGATGACAGCCGAGCGGCCGCACTGCTGGACGGCTCA 2414359
                                                                                                                                                                                                                                                                                                                                                                                                                                                         2414299
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         2414179
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      2414119
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        2414059
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    2413954
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              GCCACCAACGTCGCCCCCCCCTGGCGCGATCGAGGGCTTGGGTGCCGACATCGACGGC 1088
                                                                                                                                                                  611
                                                                                                                                                                                                                                                  671
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 908
    491
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Genome, Fragments
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        2414058 GCCACCACCGCACGCCGCGCGGCTTCGGTGCTTG--------CATACCG
                                                                                                                                                                                          2414013 AGGGTGGTATGGATCGCCGGTGGCTGCTCAAGGGCGCGTCGTTCACGCCGAGGTTGCG
    432 GGCGAAATGGCGGGTGGCCGCGGACAAGCGTGTCGCCGTCGGCGGCGCAACCTCGGCACCCCCG
                                          2414658 CACGCCATGCTGATCGCCGGTGGCCGCCGCGCCGTGCTGTGCGGCAATATCGGCAGTGCG
                                                                                   GCGCTCGACCTGCTGGCCGACGACGACGAGCTGTACGTGTTGGAGCTGTCGAGCTTCCAG
                                                                                                        552 CTGGAAACCTGCGATCGCCTCAACGCCGAGGTGGCGACCGTGCTGAACGTCAGCGAAGAC
                                                                                                                                                                                                                                                  612 CATATGGATCGCTACGACGGCATGGCTGACTACCACCTGGCCAAGCACCGGATCTTCCGC
                                                                                                                                                                                                                                                                                        2414478 CACCTGGACTGGCATGCCACGATGGCCGAATACACCGCGGCCCAAGGCCCGGGTGCTGACC
                                                                                                                                                                                                                                                                                                                                 672 GGTGCCCGCCAGGTCGTGGTGATCGCGCCGATGCCCTGACCCGGACCGCTGATCGCCGAT
                                                                                                                                                                                                                                                                                                                                                                                                                732 ACCGTGCCGTGCTGGTCG---TTCGGCCTGAACAAGCCGGACTTCAAGGCTTTCGGCCTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                       2414358 cceccecaestecesercescriccescricesceseceseceseseses
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               789 ATCGAGGAAGACGCCAGAAGTGGCTGGCGTTCCAGTTCGACAAGCTGCTGCCGGTTGGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        2414298 GGGACGCCCACCTGGTCGATCGCGCCTTCTCCGACGACTTGACGCTGCTGCTGCGGTCGCG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               849 GAACTGAAGATCCGTGGCGCCCACAACTATTCCAACGCGCTCGCCGCGCTGGCGCTGGGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          909 CATGCGGTCGGCCTGCCGTTCGACGCCATGCTCGGCGCGCTGAAGGCGTTTTCCGGCCTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               969 GCTCATCGCTGCCAGTGGGTACGCGAGCGCAGGGCGTGAGCTACCACGATTCCAAG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      2414118 CGACACCGCGCGCGGGGGGGGGCGCTTGCCGACGCCATCACCTACGTGGACGACTCCAAG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                1089 AAGCTGGTGCTGCTCGCCGGCGAGACGGCAAGGGCGCCCGATTTCCATGACCTGCGCGAG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               1149 CCGGTCGCGCGCTTCTGCCGGGCGTGCTACTGCTTGGCCGTGACGCCGGGCTGATTGCC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                æ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Sequence 1, Application US/09557884
Patent No. 6506381
GENERAL INFORMATION:
APPLICANT: Fleischmann et al.
APPLICANT: Fleischmann et al.
TITLE OF INVENTION: The Nucleotide sequence of
TITLE OF TATE OF TATE THE TATE THE TA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Inc.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     NUMBER OF SEQUENCES: 1
CORRESPONDENCE ADDRESS.
ADDRESSE: Human Genome Sciences,
STREET: 9410 Key West Avenue
CITY: ROCKVIlle
STATE: MD
COUNTRY: USA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       2413893 GAGGC 2413889
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1209 CAGGC 1213
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              US-09-557-884-1
                                                                                   492
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 1029
                                                                                                                                                                                              g
                                      g
                                                                                                                                                                õ
                                                                                                                                                                                                                                                  ð
                                                                                                                                                                                                                                                                                  g
                                                                                                                                                                                                                                                                                                                            ò
                                                                                                                                                                                                                                                                                                                                                                   g
                                                                                                                                                                                                                                                                                                                                                                                                              ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ద
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               õ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      셤
                                                                                   à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ò
2415639 CGCGACGCCCACCTGGTCGATCGCGCCTTCTCCGACGACTTGACGCTGCTGCCGGTCGCG 2415580
                                                           2415295
                                                                                                                                                                                                                                                                                                                                                                                                                                                                          CGCGCAGCTGGCTGGTGACCGGCACCAACGGCAAGACCACCACGACGTCGATGCTG 2414659
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     2414778 CCGATCTGGGGTGACGTGGAGTTAGCCTGGCGGCTAGACGCAGCGGGCTGCTACGGACCG 2414719
                                                                                                                                                                                                                                                                                    GCCACCAACGTCGGCGCCCCTGGCGGCGGATCGAGGGCTGGGTGCCGACATCGACGGC 1088
                                                                                                                                                                                                       GCTCATCGCTGCCAGTGGGTACGCGAGCGGCGTGAGCTACTACGACGATTCCAAG 1028
                                                                                                                                                                                                                                                                                                                                                                     AAGCTGGTGCTGCTCGCCGGCGGGGGGCGCCAAGGGCGCCGATTTCCATGACCTGCGCGAG 1148
                                                                                                                                                                                                                                                                                                                                                                                                                                                  CCGGTCGCGCGCTTCTGCCGGGCGGTGGTACTGCTTGGCCGTGACGCCGGGCTGATTGCC 1208
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ä,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    371
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              273 GTCAGCCCCGGCTTGTCGCTGCCACCCCTGCTACAGGCCGCCGCGAAAGGCGTG 332
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   431
                                                                                                                                               2415519 CGCTCGGTCGGGGTGCCCGCCGGTGCGACGCGGTCACGTTCGAGGGC
                                                                                                                                                                                                                                                                                                           2415399 GCCACCAACCGCACGCGCGCGCGTTCGGTGCTTG------CATACCCG
                                                                                                                       CATGCGGTCGGCCTTCGACGCCATGCTCGGCGCGCTGAAGGCGTTTTCCGGCCTG
                                                                                                                                                                                                                                                                                                                                                                                                            2415354 AGGGGGGTATGGATCGCCGGTGGCCTCAAGGCCGCGTCGCTTCACGCCGAGGTTGCG
                                      GAACTGAAGATCCGTGGCGCCCACAACTATTCCAACGCGCTCGCCGCGCTGGCCCTGGGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    -----CGAGGCG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               372 AAGGCCCCGATCGTCGCCATCACCGGTTCCAACGCGAAGAGCACCGTGACCACCCTGGTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          39; Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            FOR STRAIN ANALYSIS IN MYCOBACTERIUM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Length 4403765;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   positions throughout the g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 CGCATCTCCGGTGACATCGATCTCTTCGCCCG-----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Score 172.2; DB 3;
Pred. No. 4.6e-24;
0; Mismatches 428;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          APPLICANT: WHITE, Owen R.
APPLICANT: FRASER, Claire M.
APPLICANT: VENTER, John C.
TITLE OF INVENTION: DNA SEQUENCES FOR STRAIN
TITLE OF INVENTION: TUBERCULOSIS
FILE REFERENCE: 24366-2007.00
CURRENT APPLICATION NUMBER: US/09/103,840A
CURRENT FILING DATE: 1998-06-24
NUMBER OF SEQ ID NOS: 2
SOFTWARE: PATENTIN Ver. 2.1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  at various
a, t, c or
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              TYPE: DNA ORGANISM: Mycobacterium tuberculosis
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Sequence 2, Application US/09103840A
Patent No. 6294328
GENERAL INFORMATION:
APPLICANT: FLEISCHMAN, Robert D.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                FEATURE:
OTHER INFORMATION: CDC 1551
OTHER INFORMATION: "n" bases;
OTHER INFORMATION: represent
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               11.9%;
illarity 51.6%;
Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        2415234 GAGGC 2415230
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    1209 CAGGC 1213
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           4403765
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            US-09-103-840A-2/C
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Query Match
Best Local Simi:
Matches 498; (
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        US-09-103-840A-2
                                                                                                                                                                                                       696
                                                                                                                       606
                                                                                                                                                                                                                                                                                                                                                                     1089
                                                                                                                                                                                                                                                                                      1029
                                                                                                                                                                                                                                                                                                                                                                                                                                                    1149
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 333
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       2414838
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       2414718
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     SEQ ID NO 2
```

```
.203993 GATTCAATTCGTACCGCACTTCGTCATTTCAAAGGGTAGAGTCATCGTTTTCAATTAGTG 1204052
                                                                                                                                                                                                                                                                                                      1204113 GTTGCTGCATTGGCTGGGCT----TTATATTGAGGGTAAATTGCATTTGTTGTTGCTAGGC 1204166
                                         1203933 CATAATTATGAACATTTTGGCAGCAACAGCATTGGCACAAGCTATAGGTATTAATTTA 1203992
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         TITLE OF INVENTION: The Nucleotide sequence of the Haemophilus influenzae Rd Genome, Fragments Thereof, and Uses Thereof
870 CACAACTATTCCAACGCGCTCGCCGCGCTGGCGCTGGGCCATGCGGTCGGCCTGCCGTTC
                                                                                    930 GACGCCATGCTCGGCGCGCGCTGAAGGCGTTTTCCGGCCTGGCTCATCGCTGCCAGTGGGTA
                                                                                                                                                                         CGCGAGCGGCAGGGCGTGAGTACGACGATTCCAAGGCCACCAACGTCGGCGCCGCC
                                                                                                                                                                                                    1050 CTGGCGGCGATCGAGGGGCTGGGTGCCGACATCGACGGCAAGCTGGTGCTGCTGCTCGCCGGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Length 1830121;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              DB 4;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Sciences, Inc
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       APPLICATION NUMBER: US/09/643,990A FILING DEFE: 23-Aug-2000 CLASSIFICATION: CLASSIFICATION CONKNOWN>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       PB186P1C1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              MEDIUM TYPE: 3 1/2 inch diskette
COMPUTER: Dell Pentium
OPERATING SYSTEM: MS DOS v6.22
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              10.3%; Score 149.8;
                                                                                                                                                                                                                                                                                                                                                                         1204167 GGAGACGGAAAAGGGGCTGATTT 1204189
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                FILING DATE: 1995-06-07
APPLICATION NUMBER: 08/426,787
FILING DATE: 1995-04-21
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                APPLICATION NUMBER: 08/487,429
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    CORRESPONDENCE ADDRESS:
ADDRESSEE: Human Genome Scien
STREET: 9410 Key West Avenue
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           NAME: Kenley K. Hoover
REGISTRATION NUMBER: 40,302
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         TOPOLOGY: linear
SEQUENCE DESCRIPTION: SEQ ID NO:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       APPLICANT: Robert D. Fleischmann
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     REFERENCE/DOCKET NUMBER:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              TELECOMMUNICATION INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Sequence 1, Application US/09643990A Patent No. 6528289 GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                1110 GGAGACGGCAAGGGCGCCGATTT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ATTORNEY/AGENT INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                TELEFAX: 310-309-8439
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              SOFTWARE: ASCII Text CURRENT APPLICATION DATA:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           TYPE: nucleic acid
STRANDEDNESS: double
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Mark D. Adams
Owen White
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  SEQUENCE CHARACTERISTICS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ZIP: 20850
COMPUTER READABLE FORM:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              INFORMATION FOR SEQ ID NO:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    CITY: Rockville,
STATE: MD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  COUNTRY: USA
                                                                                                                                                                                                                                                                                                                                                                                                                                                             RESULT 11
US-09-643-990A-1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  US-09-643-990A-1
                                                                                                                                                                         990
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Query Match
                                                                                                                                                                                                                g
                                                                                                                                                                                                                                                                                                    qq
                                                                                    ŏ
                                                                                                                           q
                                                                                                                                                                      ο
                                                                                                                                                                                                                                                             ο
                                                                                                                                                                                                                                                                                                                                                  ò
                                                                                                                                                                                                                                                                                                                                                                                           q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    1203341 TATTAGCCCAGGGCTTGCGGTAAAACACCCAGAAATTCAAACCGCACTTAAAGCGGGAGT 1203400
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1203640
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1203641 AAAAGCTGCGGCAGCGACTGTCTTGAACGTGACTGAAGATCATATGGATCGCTATATGGA 1203700
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                1203701 TITAGAAGATTATCGCCAAGCAAATTACGCATTTATCATAATGCTAAAGTAGGTGTGTT 1203760
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1203761 GAACAATGAAGATAGGCTGACTTTTGGGGAAAACGAAAATCAAGCGAAACATACCGTTTC 1203820
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           1203821 TTTTGCGGAAATAGTGCGGATTATTGGCTAAAAACT-----GAAAATGGCAAGCAA 1203872
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                571
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         332 GCGCATCTCCGGTGACATCTCTTCGCCCGCGAGGCGAAGGCCCCGGATCGTCGCCAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1203521 TGGTGTGAAAGTTGGTATGGGCGGAAATATTGGGATTCCCGCTTTGTCATTGTTGAATGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  1203581 AGATTGTGAACTTTATGTACTAGAGCTTTCTAGTTTTCAGCTTGAGACAACTTATAGCTT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       272 TGTCAGCCCCGGCTTGTCGCTGCGCACCCCTGCGCTGGTACAGGCCGCCGCGAAAGGCGT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                392 CACCGGTTCCAACGCGAAGAGCACCGTGACCACCCTGGTGGGGGGAAATGGCGGTGGCCGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    452 GGACAAGCGTGTCGCCGTCGGCGGCAACCTCGGCACCCCGGCGCTCGACCTGCTGGCCGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           CGACATCGAGCTGTACGTGTTGGAGCTGTCGAGCTTCCAGCTGGAAACCTGCGATCGCCT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                572 CAACGCCGAGGTGGCGACCGTGCTGAACGTCAGGAAGACCATATGGATCGCTACGACGG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           TTCGGCCTGAACAAGCCGGACTTCAAGGCTTTCGGCCTGATCGAGGAAGACGGCCAGAAG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         TGCTTGCCGTTCCAGTTCGACAAGCTGCTGCCGGTTGGCGAACTGAAGATCCGTGGCGCC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       CATGGCTGACTACCACCTGGCCAAGCACCGGATCTTCCGCGGTGCCCGCCAGGTCGTGGT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Length 1830121;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       DB 4;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  407;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           .2e-20;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Mismatches
                                                                                                                                             APPLICATION NUMBER: US/09/557,884 FILING DATE: 25-Apr-2000 CLASSIFICATION: <UNKNOWN>
                                    MEDIUM TYPE: 3 1/2 inch diskette
COMPUTER: Dell Pentium
OPERATING SYSTEM: MS DOS v6.22
                                                                                                                                                                                                                                                                                                  NAME: Michelle S. Marks
REGISTRATION NUMBER: 41,971
REFERENCE/DOCKET NUMBER: PB186P3
TELECOMMUNICATION INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Score 149.8;
Pred. No. 7.3
                                                                                                                                                                                                                                APPLICATION NUMBER: 08/476,102 FILING DATE: JUN-5-1995 ATTORNEY/AGENT INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                TOPOLOGY: linear SEQUENCE DESCRIPTION: SEQ ID NO:
                                                                                                                                                                                                                                                                                                                                                                                                                                                  SEQUENCE CHARACTERISTICS:
LENGTH: 1830121 base pairs
                                                                                                                                                                                                                                                                                                                                                                                         TELEPHONE: 301-309-8504
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ó
                                                                                                                                                                                                                                                                                                                                                                                                           TELEFAX: 301-309-8439
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  TYPE: nucleic acid
STRANDEDNESS: double
                                                                                                                           APPLICATION DATA:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    10.3%;
51.0%;
                                                                                                                                                                                                                  PRIOR APPLICATION DATA:
                                                                                                                                                                                                                                                                                                                                                                                                                                  INFORMATION FOR SEC ID NO: 1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Matches 440; Conservative
                COMPUTER READABLE MEDIUM TYPE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Query Match
Best Local Similarity
                                                                                                                           CURRENT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       US-09-557-884-1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       632
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  750
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       810
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                å
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ద
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  à
```

```
ORGANISM: Pseudomonas aeruginosa
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Genomic DNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     9515 base pairs
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            SOFTWARE: Patentin Rele
CURRENT APPLICATION DATA:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   TELEFAX: 312/474-0448
TELEX: 25-3856
INFORMATION FOR SEQ ID NO:
SEQUENCE CHARACTERISTICS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       TYPE: nucleic acid STRANDEDNESS: double
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           linear
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      CITY: Chicago
STATE: Illinois
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        TOPOLOGY: lines
MOLECULE TYPE: GO
ORIGINAL SOURCE:
                                                                                                                                                                                                  US-09-252-991A-7929
                                                                                                                                               LENGTH: 1170
                                                                                                                                                                                                                                                                                                                                                                                                                                                                              US-08-920-812-13
                                                                                                                                                                                                                                                                                                        δ
                                                                                                                                                                                                                                                                                                                                       윱
                                                                                                                                                                                                                                                                                                                                                                         ò
                                                                                                                                                                                                                                                                                                                                                                                                         g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 RESULT 12
12.043-7929/C
12.04-7929/C
15.040ence 7929. Application US/09252991A
15.040ence 7929. Application US/09252991A
15.040ence 70.0551795
16.051795
17.05170AT: Marc J. Rubenfield et al.
17.05171E.05170AT: Marc J. RUBENFICH ACID AND AMINO ACID SEQUENCES RELATING TO PSEUDOMONAS
17.05171E.05170ENTION: AERGINOSA FOR DIAGNOSTICS AND THERAPEUTICS
17.05171E.051706.136
                                                                           1203521 TGGTGTGAAAGTTGGTATGGGCGGAAATATTGGGATTCCCGCTTTGTCATTGTTGAATGA 1203580
                                                                                                                                                                                                                                                                                                                                                                                                                          1203761 GAACAATGAAGATAGGCTGACTTTTGGGGAAAACGAAAATCAAGCGAAACATACCGTTTC 1203820
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1203821 TTTGCGGAAAATAGTGCGGATTATTGGCTAAAAACT-----GAAAATGGCAAGCAA 1203872
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           1203933 CATAATTATATGAACATTTTGGCAGCAACAGCATTGGCACAAGCTATAGGTATTAATTTA 1203992
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            3;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         990 CGCGAGCGCCAGGCGTGAGCTACTACGACGATTCCAAGGCCACCAACGTCGGCGCCGCC 1049
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            1050 CTGGCGGCGATCGAGGGGCTGCCGACATCGACGCCAAGCTGGTGCTGCTCGCCGGC 1109
                                                                                                                                                                                                                                                                                                                                       571
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               750 TICGGCCIGAACAAGCCGGACTICAAGGCITICGGCCIGATCGAGGAAGACGGCCAGAAG 809
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     930 GACGCCATGCTCGGCGCGCTGAAGGCGTTTTCCGGCCTGGCTCATCGCTGCCAGTGGGTA 989
                                                                                                                                                                                                                                                                                                                                 512 CGACATCGAGCTGTACGTGTTGGAGCTGTCGAGCTTCCAGCTGGAAACCTGCGATCGCCT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 870 CACAACTATTCCAACGCGCTCGCCGCGTGGCGCTGGGCCATGCGGTCGGCCTGCCGTTC
                                                    272 TGTCAGCCCCGGCTTGTCGCTGCGCACCCCTGCGTACAGGCCGCCGCGGAAAGGCGT
                                                                                                                        332 GCGCATCTCCGGTGACATCGATCTTTCGCCCGCGAGGCGAAGGCCCCCGATCGTCGCCAT
                                                                                                                                                                                            392 CACCGGTTCCAACGCGAAGAGCACCGTGACCACCTGGTGGGGGGAAATGGCGGTGGCCGC
                                                                                                                                                                                                                                                                 GGACAAGCGTGTCGCCGTCGCCGCAACCTCGGCACCCCGGCGCTCGACCTGCTGGCCGA
                                                                                                                                                                                                                                                                                                                                                                                                      572 CAACGCCGAGGTGGCGACCGTGCTGAACGTCAGCGAAGACCATATGGATCGCTACGACGG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             810 TGGCTGGCGTTCCAGTTCGACAAGCTGCCGGTTGGCGAACTGAAGATCCGTGGCGCC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                        632 CATGGCTGACTACCACCTGGCCAAGCACCGGATCTTCCGCGGTGCCCGCCAGGTCGTGGT
                         Gaps
                         16;
51.0%; Pred. No. /.ze.zv,
tive 0; Mismatches 407; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             1204167 GGAGACGGAAAAGGGGCTGATTT 1204189
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1110 GGAGACGCCAAGGCCCCCGATTT 1132
                   440; Conservative
 Best Local Similarity
Matches 440; Conserv
                                                                                      ద
                                                                                                                                                        셤
                                                       à
                                                                                                                        å
                                                                                                                                                                                            ò
                                                                                                                                                                                                                           g
                                                                                                                                                                                                                                                               ò
                                                                                                                                                                                                                                                                                             g
                                                                                                                                                                                                                                                                                                                                   ö
                                                                                                                                                                                                                                                                                                                                                                a
                                                                                                                                                                                                                                                                                                                                                                                                      õ
                                                                                                                                                                                                                                                                                                                                                                                                                                      g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ç
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ద
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  å
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            셤
```

```
62 CGCCTCCGACCACTTCCGCATCGTTGTCGGCCTCGGCAAGAGCGGCATGTCCCTGGTGCG 121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          120 GTGCTGATCGCCCTCGCCACCTTGAAGCTGCGTTGAGGACGAAGAGAGACATGAGCCTGAT 61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       2 GTGCTGATCGCCCTCGCCACCTTGAAGCTGCGTTGAGGACGAGGAGGAGCATGAGCCTGAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Probe for Diagnosing Infectious Disease
                                                                                                                                                                                                                                                                                                                                                                                                         Length 1170;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                      0; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Gerstein, Murray &
South Wacker Drive
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          COMPUTER READBALE FORM:
MEDIUM TYPE: Floppy disk
COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
SOFTWARE: PatentIn Release #1.0, Version #1.25
                                                                                                                                                                                                                                                                                                                                                                                                      Query Match

8.3%; Score 120; DB 4;
Best Local Similarity 100.0%; Pred. No. 1.8e-14;
Matches 120; Conservative 0; Mismatches 0;
CURRENT APPLICATION NUMBER: US/09/252,991A CURRENT FILING DATE: 1999-02-18 PRIOR APPLICATION NUMBER: US 60/074,788 PRIOR FILING DATE: 1998-02-18
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              NAME: Rin-Laures, LI-HSien
REGISTRATION NUMBER: 33,547
REFERNCE/DOCKET NUMBER: 19036/32420
TELECOMMUNICATION INFORMATION:
TELEPHONE: 312/474-6300
                            CURRENT FILING DATE: 1999-02-18
PRIOR PAPLICATION NUMBER: US 60/074,788
PRIOR FILING DATE: 1998-02-18
PRIOR APPLICATION NUMBER: US 60/094,190
PRIOR ALIANG DATE: 1998-07-27
NUMBER OF SEQ ID NOS: 33142
SEQ ID NO 7929
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          APPLICATION NUMBER: US/08/920,812
FILING DATE: 29-AUG-1997
CLASSIFICATION: 435
PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 08/362,577
FILING DATE: 27-MAR-1995
ATTORNEY/AGENT INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    COUNTRY: United States of America 2IP: 60606-6402
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Sequence 13, Application US/08920812
Patent No. 5763188
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          CORRESPONDENCE ADDRESS:
ADDRESSEE: Marshall, O'Toole,
STREET: 6300 Sears Tower, 233
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       GENERAL INFORMATION:
APPLICANT: Ohno, Tsuneya
APPLICANT: Matsuhisa, Akio
APPLICANT: Uchara, Hirotsugu
APPLICANT: Eda, Soji
TITLE OF INVENTION: Probe for INVENTION: PROBER OF SEQUENCES: 25
                                                                                                                                                                                                                                                                                TYPE: DNA
ORGANISM: Pseudomonas aeruginosa
```

```
CCCACGGCCTGACTTCCGGCCACCCGGTGGCGGCGGGGGGGCGTGGCCATCGCCAACCTCA 4513
 5282 AAGGTCAGCTGGGACGTGGTCGAGGTGGAGAGCCCCGAACTGCTCCGCGGGTGCGACGAG 5341
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      343 GTGACATCGATCTTTCGCCCGCGAGGCGAAGGCCCCCGATCGTCGCCATCACCGGTTCCA 402
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 403 ACGCGAAGAGCACCGTGACCACCCTGGTGGGCGAAATGGCCGGTGGCCGCGGACAAGCGTG 462
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            GCGGCCTGGTACTCGGCAAAGCGCATCGCCGAGGTGCTGGTGGAGCAGGGCGGGGTGTTCG
                                                                                                                                                                                                                            APPLICANT: Ohno, Tsuneya
APPLICANT: Matsuhisa, Akio
APPLICANT: Watsuhisa, Akio
APPLICANT: Eda, Soji
TITLE OF INVENTION: Probe for Diagnosing Infectious Disease
CORRESPONDENCE ADDRESS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Length 9515;
                                                                                                                                                                                                                                                                                                                            ANDKESSEE: Marshall, O'Toole, Gerstein, Murray & STREET: 6300 Sears Tower, 233 South Wacker Drive CITY: Chicago STATE: Illino'e
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     SOFTWARE: Patentin Release #1.0, Version #1.25
CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/08/920,827
FILING DATE: 29-AUG-1997
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    0; Mismatches 560;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  DB 1;
4e-06;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 08/362,577
FILING DATE: 27.AMR-1995
ATTORNEY,AGENT INFORMATION:
NAME: Rin-Laures, Li-Hsien
REGISTRATION NUMBER: 33,547
REFERENCE/DOCKET NUMBER: 19036/32420
TELECOMMUNICATION INFORMATION:
TELEFRNENCE, 312,474-6300
TELEFRX: 312,474-6448
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                5.2%; Score 76; 44.3%; Pred. No.
                                                                                                                                                                                                                                                                                                                                                                                                                                         America
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       : Pseudomonas aeruginosa
Clinical Isolate P2-2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             MEDIUM TYPE: Floppy disk
COMPUTER: IBM PC COMPATIBLE
OPERATING SYSTEM: PC-DOS/MS-DOS
                                                                                                                                                                   Sequence 13, Application US/08920827
Patent No. 5770375
GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    STATE: Illinois
COUNTRY: United States of
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Genomic DNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Query Match
Best Local Similarity 44.3
Matches 455; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   TYPE: nucleic acid
STRANDEDNESS: double
                                                                                                                                                                                                                                                                                                                                                                                                                                                                           COMPUTER READABLE FORM:
                                     1302 GTGCTGTT 1309
                                                           linear
                                                                                                                                                                                                                                                                                                                                                                                                                                                         60606-6402
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   CLASSIFICATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             MOLECULE TYPE: CORIGINAL SOURCE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             TOPOLOGY:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ORGANISM:
                                                                                                                                 RESULT 14
US-08-920-827-13
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         US-08-920-827-13
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            4394
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          g
 셤
                                     ò
                                                                         g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ŏ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               1394 GCGGCCTGGTACTCGGCAAGCGCATCTTCCCGAGGTGTGGAGCAGGGCGGGGTGTTCG 4453
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   4988 CAACTGCCTAAGCAACATCACAACAATGCCAATCGGCTGTGGGAGTGTTCCATGTTCAAG 5047
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        GCCGCCCAGGAACAGGCCTATTCAAACCCTTCGAGCGAAGCGGCGGGGGGCAGGTGGTC 5227
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            1182 CTTGGCCGTGACGCCGGGCTGATTGCCCCAGGCACTGGGCAACGCGGTACCGCTGGTGCGC 1241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     1242 GTCGCAACGCTGGACGAAGCAGTCCGGCAGGCCGCCGAGCTGGCCGGAAGGCGAAGGCGATGCG 1301
                                                                                             э;
                                                                                                                                                               GCTTCCAGCCGGACACCTTGTCCATCGCCAAGGGCCTGACGTCCGGCTACATCCCCATGG 4393
                                                                                                                                                                                                                                                                                                                      4454 CCCACGGCCTGACCTATTCCGGCCACCCGGTGGCGGCGGCGGTGGCCATCGCCAACCTCA 4513
                                                                                                                                                                                                                                                                                                                                                                                                4514 AGGCTGCGCGACGAGGGCGTGGTCACGCGGGTCAGGAGGAGGAGGACCGGCCCCTACCTGCAA 4573
                                                                                                                                                                                                                                                                                                                                                                                                                                                                         1574 CGCTGCCTGCGCGAGGTCTTCGGCGACCATCCGCTGGTCGGCGAGGTCCAGGGCGCCGGC 4633
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     1634 TTCGTCGCCGCGCTGCAGTTCGCCGAGGACAAGGTGACCCGCAAGCGCTTCGCCAACGAG 4693
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                1814 GAACTGATCGACAAGAC-----CCGTATCGCGGTGGATCGCACCGCGCGGGGAGATCGGC 4867
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            4868 GTGCTCTGACGCCCCCGGCGGCCCGGCCTCGGCCGGGTCGCCTGCGACACGGAGCGTCC 4927
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           942 GGCGCGCTGAAGGCGTTTTCCGGCCTGGCTCATCGCTGCCAGTGGGTACGCGAGCGGCAG 1001
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1002 GGCGTGAGCTACTACGACGATTCCAAGGCCACCAACGTCGCGCCCCCTGGCGGCGATC 1061
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    1062 GAGGGGCTGGGTGCCGACATCGACGCCAAGCTGGTGCTGCTCGCCGGCGGAGACGGCAAG 1121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                GGCGCCGATTTCCATGACCTGCGCGAGCCGGTCGCGCGCTTCTGCCGGGCGGTGGTACTG 1181
                                                                                                                               283 GCTTGTCGCTGCGCACCCCTGCGCTGGTACAGGCCGCGCGAAAGGCGTGCGCATCTCCG 342
                                                                                                                                                                                                         GTGACATCGATCTCTTCGCCCGCGAGGCGAAGGCCCCGATCGTCGCCATCACCGGTTCCA 402
                                                                                                                                                                                                                                                                                  ACGCGAAGAGCACCGTGACCACCCTGGTGGGGGGAAATGGCGGTGGCCGGGACAAGCGTG 462
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  702 GATGCCCTGACCGGACGCTGATCGCCGATACCGTGCCGTGCTGGTCGTTCGGCCTGAAC 761
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 882 AACGCGCTCGCCGCGCTGGGCCTTGGGGTCGGCCTGCCGTTCGACGCCATGCTC 941
                                                                                                                                                                                                                                                                                                                                                        TCGCCG-TCGGCGGCAACCTCGGCACCCCGGCGCTCGACCTGCTGGCCGACGACGACATCGAG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          CTGTACGTGTTGGAGCTGTCGAGCTTCCAGCTGGAAACCTGCGATCGCCTCAACGCCGAG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               582 GTGGCGACCGTGCTGAACGTCAGCGAAGACCATATGGATCGCTACGACGCCATGGCTGAC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             642 TACCACCTGGCCAAGCACCGGATCTTCCGCGGTGCCCGGCCAGGTCGTGGTGAATCGCGCC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              CAGTICGACAAGCIGCIGCCGGIIGGCGAACIGAAGAICCGIGGCGCCCACAACIAIICC
                                                                                             Gaps
                                                                                             13;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Length 9515;
                                                                                           0; Mismatches 560; Indels
                                                     Score 76; DB 1;
Pred. No. 4e-06;
Clinical Isolate P2-2
                                                   Query Match 5.2%;
Best Local Similarity 44.3%;
Matches 455; Conservative
; STRAIN: C
US-08-920-812-13
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          5108
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                1122
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      5168
                                                                                                                                                                                                         343
                                                                                                                                                                                                                                                                                  403
                                                                                                                                                                                                                                                                                                                                                          463
                                                                                                                                                                                                                                                                                                                                                                                                                                     522
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      822
                                                                                                                                                                                                                                                                                                                  셤
                                                                                                                                                                                                                                                                                                                                                                                          g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 qq
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ď
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 엄
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ŏ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  g
                                                                                                                                                                 g
                                                                                                                                                                                                         à
                                                                                                                                                                                                                                          셤
                                                                                                                                                                                                                                                                                ö
                                                                                                                                                                                                                                                                                                                                                          ò
                                                                                                                                                                                                                                                                                                                                                                                                                                    õ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                         a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          δ
```

4393

342

'n

```
4454 CCCACGGCCTGACCTATTCCGGCCACCCGTGGCGGCGGCGGTGGCCATCGCCAACCTCA 4513
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              283 GCTTGTCGCTGCGCACCCCTGCGCTGGTACAGGCCGCCGCGAAAGGCGTGCGCATCTCCG 342
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          4754 TCCACCCTCGGCCGCATGATCATGGCCCCGGCGCTGGTGGCCGGGCGTGCCGAGATCGAC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       4394 GCGGCCTGGTACTCGCCAAGCGCATCGCCGAGGTGCTGGTGGAGCAGGGCGGGGTGTTCG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       4334 GCTTCCAGCCGGACACCTTGTCCATCGCCAAGGGCCTGACGTCCGGCTACATCCCCATGG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   343 GTGACATCGATCTCTTCGCCCGCGAGGCCGAAGGCCCCGATCGTCGCCATCACCGGTTCCA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ACGCGAAGAGCACCGTGACCACCCTGGTGGGCGAAATGGCGGTGGCCGCGGGACAAGCGTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           463 TCGCCG-TCGCCGCCAACCTCGGCACCCCGGCGCTCGACCTGCTGGCCGACGACATCGAG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             4514 AGGCTGCGCGACGAGGCGTGGTCACGGGAGGAGGAGGAGGCGGCCCCTACCTGCAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      CTGTACGTGTTGGAGCTGTCGAGCTTCCAGCTGGAAACCTGCGATCGCCTCAACGCCGAG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   582 GTGGCGACCGTGCTGAACGTCAGCGAAGACCATATGGATCGCTACGACGGCATGGCTGAC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        4634 TTCGTCGCCGCGCTGCAGTTCGCCGAGGACAAGGTGACCCGCAAGCGCTTCGCCAACGAG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              642 TACCACCTGGCCAAGCACCGGATCTTCCGCGGTGCCCGCCAGGTCGTGGTGAATCGCGCC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         13;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Query Match 5.2%; Score 76; DB 1; Length 9515; Best Local Similarity 44.3%; Pred. No. 4e-06; Matches 455; Conservative 0; Mismatches 560; Indels
3: Marshall, O'Toole, Gerstein, Murray & Borun
6300 Sears Tower, 233 South Wacker Drive
                                                                                                               COMPUTER REDUBLE FORM:
MEDIUM TYPE: Floppy disk
COMPUTER: IBM PC COMPATIBLE
OPERATING SYSTEM: PC-DOS/MS-DOS
SOFTWARE: PATENTIN Release #1.0, Version #1.25
APPLICATION NDATA: US/08/921,177
ETLING DATE: 29-AUG-1997
                                                                                                                                                                                                                                                                                                                                                                       NAME: Rin-Laures, Li-Hsien
REGISTRATION NUMBER: 33,547
REFERENCE/DOCKET NUMBER: 19036/32420
TELECOMMUNICATION INFORMATION:
TELEPHONE: 312/474-6300
TELEFAX: 312/474-6408
                                                        STATE: Illinois
COUNTRY: United States of America
ZIP: 60606-6402
                                                                                                                                                                                                                                                                                            PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 08/362,577
ELLING DATE: 27-MAR-1995
ATTORNEY/AGENT INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             יראזוא: Pseudomonas aeruginosa
; STRAIN: Clinical Isolate P2-2
US-08-921-177-13
                                                                                                                                                                                                                                                                                                                                                                                                                                                                        TELEK: 25-3856
TELEK: 25-3856
INFORMATION FOR SEQ ID NO: 13:
SEQUENCE CHARACTERISTICS:
LENGTH: 9515 base pairs
TYPE: nucleic acid
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           MOLECULE TYPE: Genomic DNA ORIGINAL SOURCE: ORGANISM: Pseudomonas ae:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        double
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              linear
          STREET: bc.
                                                                                                                                                                                                                                                                              CLASSIFICATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    STRANDEDNESS
TOPOLOGY: 1:
ADDRESSEE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      522
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                403
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         å
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   õ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 5047
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        1061
                                                                                                                                                                                                                                                                         4753
                                                                                                                                                                                                                                                                                                                                                                                                                                4867
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             1001
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 1121
                                                                                                 1868 GIGCICIGACGCCCCGGCCGGCCCGGCCGGCCGGGTCGCCTGCGAACGGAGCGTCC.4927
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             882 AACGCGCTCGCCGCTGGCGCTGGGCCATGCGGTCGGCCTGCCGTTCGACGCCATGCTC 941
463 TCGCCG-TCGGCGGCAACCTCGGCACCCGGCGCTCGACCTGCTGGCGGCGACGACATCGAG 521
                                                                                                                                                                                                                                                                   4694 AACGATCTGGCCTGCCGCCACCATCGGCGGCTTCGAGGAGGCGTGATCATCCGC
                                                                                                                                                                                                                                                                                                                                                                                                                5282 AAGGTCAGCTGGGACGTGGAGGTGGAGGCCCCGAACTGCTCCGCGGGTGCGACGAG
                                      1514 AGGCTGCGCGAGGGCGTGGTCACGCGGGTCAGGGAGGAGGAGCCGGCCCTACCTGCAA
                                                                             CTGTACGTGTTGGAGCTGTCGAGCTTCCAGCTGGAAACCTGCGATCGCCTCAACGCCGAG
                                                                                                                                                          GTGGCGACCGTGCTGAACGTCAGCGAAGACCATATGGATCGCTACGACGGCATGGCTGAC
                                                                                                                                                                                1634 TICGTCGCCGCGCTGCAGTTCGCCGAGGACAAGGTGACCCGCAAGCGCTTCGCCAACGAG
                                                                                                                                                                                                                                                                                                                                                   4754 TCCACCTCGGCCGCATGATCATGGCCCCGGCGCTGGTGGCCGGGCGTGCCGAGATCGAC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         942 GGCGCGCTGAAGGCGTTTTCCGGCCTGGCTCATCGCTGCCAGTGGGTACGCGAGCGGCAG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             4988 CAACTGCCTAAGCAACATCACAATGCCAATCGGCTGTGGGAGTGTTCCATGTTCAAG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    GGCGTGAGCTACTACGACGATTCCAAGGCCACCAACGTCGGCGCCCCTGGCGGCGATC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          5048 TCCTTGCACCAGTACGCACACGTTTTCCCGGTTGTCCCTGTTCGTCCTGGCGTTCGCC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               GAGGGCTGGGTGCCGACATCGACGCCAAGCTGGTGCTGCTCGCCGGCGGGAGACGGCAAG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     CTTGGCCGTGACGCCGGGCTGATTGCCCAGGCACTGGGCAACGCGGTACCGCTGGTGCGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  GTCGCAACGCTGGACGAAGCAGTCCGGCAGGCCGCCGAGGCCGCGCGAAGGCGATGCG
                                                                                                                                                                                                                                   TACCACCTGGCCAAGCACCGGATCTTCCGCGGTGCCCGCCAGGTCGTGGTGAATCGCGCC
                                                                                                                                                                                                                                                                                                                CAGITCGACAAGCIGCIGCCGGITGGCGAACTGAAGAICCGTGGCGCCCACAACIATICC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    CCCCATAACGACGATGCGGCGCTGGCGACCGCGGGGAACCGTTTCGGCCTCTGGCGG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            GCCGGCGAATACAACGGCGAAATGGCCAAGGTGAAGGCCATGGTCG-----ACGTCGGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      APPLICANT: Ohno, Tsuneya
APPLICANT: Ohno, Tsuneya
APPLICANT: Watsuhisa, Akio
APPLICANT: Uchara, Hirotsugu
APPLICANT: Eda, Soji
TITLE OF INVENTION: Probe for Diagnosing Infectious Disease
CORRESPONDENCE ADDRESS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Sequence 13, Application US/08921177 Patent No. 5798211 GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               GTGCTGTT 1309
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    GGGCTGTT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             US-08-921-177-13
                                                                                                                                                      582
                                                                                                                                                                                                                                                                                                                                                                                                                                                                    822
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    4928
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    1002
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               1062
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   5108
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              5168
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     1182
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            5228
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  1242
                                                                             522
                                                                                                                                                                                                                                   642
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  5342
                                                                                                                                                                                                                                                                                                            702
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            1122
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               1302
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               RESULT 15
à
                                    음
                                                                           å
                                                                                                               g
                                                                                                                                                      ò
                                                                                                                                                                                          පු
                                                                                                                                                                                                                                   ò
                                                                                                                                                                                                                                                                   셤
                                                                                                                                                                                                                                                                                                            ò
                                                                                                                                                                                                                                                                                                                                                 요
                                                                                                                                                                                                                                                                                                                                                                                       ò
                                                                                                                                                                                                                                                                                                                                                                                                                          g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    õ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      පු
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          õ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     원
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ò
```

4393

ë,

Gaps

4573

641

521

4813

```
1182 CTTGGCCGTGACGCCGGGCTGATTGCCCAGGCACTGGGCAACGCGGTACCGCTGGTGCGC 1241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         1242 GTCGCAACGCTGGACGAAGCAGTCCGGCAGGCCGCCGAGGTGGCCGCGAAGGCGATGCG 1301
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                5282 AAGGTCAGCTGGGACGTCGAGGTGGAGGACCCCCGAACTGCTCCGCGCTGCGAGG 5341
                                  4814 GAACTGATCGACAAGAC-----CGTATCGCGGTGGATCGCACCGCGCGCGAGATCGGC 4867
                                                                                                     4868 GIGCICITARACGCCCCCCGCCCGGCCTCGGCCGGGTCGCCTGCGACACGGAGCGICC 4927
                                                                                                                                                                  942 GGCGCGCTGAAGGCGTTTTCCGGCCTGGCTCATCGCTGCCAGTGGGTACGCGAGCGGCAG 1001
                                                                                                                                                                                                                                           1002 GGCGTGAGCTACTACGACGATTCCAAGGCCACCAACGTCGGCGCCGCCCTGGCGGCGATC 1061
                                                                                                                                                                                                                                                                                                                    5048 TCCTTGCACCAGTACGCACACGTGTTTCCCGGTTGTCCTTTCGTCCTGGCGTTCGCC 5107
                                                                                                                                                                                                                                                                                                                                                                  1062 GAGGGGCTGGGTGCCGACATCGACGGCAAGCTGGTGCTGCTCGCCGGCGAGACGGCAAG 1121
                                                                                                                                                                                                                                                                                                                                                                                           1122 GGCGCCGATTTCCATGACCTGCGGAGCCGGTCGCGCGCTTCTGCCGGGCGGTGGTACTG 1181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                    5228 GCCGCCGAATACAACGCCGAAATGCCCAAGGTGAAGGCCATGGTCG-----ACGTCGGC 5281
                                                                   822 CAGTICGACAAGCIGCIGCIGGIIGGCGAACIGAAGAICCGIGGCGCCCACAACIAIIICC 881
                                                                                                                                           882 AACGCGCCCCCCCCCCCTGGCCCATGCGGTCGGCCTGCCGTTCGACGCCATGCTC 941
1302 GTGCTGTT 1309
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       g
ŏ
                                셤
                                                                     ò
                                                                                                     a
                                                                                                                                             ò
                                                                                                                                                                              g
                                                                                                                                                                                                                  õ
                                                                                                                                                                                                                                                     g
                                                                                                                                                                                                                                                                                           ò
                                                                                                                                                                                                                                                                                                                              g
                                                                                                                                                                                                                                                                                                                                                                  δ
                                                                                                                                                                                                                                                                                                                                                                                                       ద
                                                                                                                                                                                                                                                                                                                                                                                                                                           ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                            셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     g
```

Search completed: August 14, 2003, 04:14:48 Job time : 134 secs

THIS PAGE BLANK (USPTO)

```
(without alignments)
7726.222 Million cell updates/sec
                                                                                                                               August 14, 2003, 04:40:26; Search time 420 Seconds
                                                                                                                                                                                                                         3008958
         GenCore version 5.1.6
Copyright (c) 1993 - 2003 Compugen Ltd.
                                                                                                                                                                                                                        Total number of hits satisfying chosen parameters:
                                                                                                                                                                                1504479 segs, 1118970152 residues
                                                                                                                                                                                                                                                                                              Published_Applications_NA:*
                                                 - nucleic search, using sw model
                                                                                                                                                                                                                                                                          Post-processing: Listing first 45 summaries
                                                                                                                                                   OLIGO_NUC
Gapop 60.0 , Gapext 60.0
                                                                                                                                                                                                                                            Minimum DB seq length: 0
Maximum DB seq length: 2000000000
                                                                                                           us-09-701-229-1
                                                                                                                                                                                                     0
                                                                                                                      Perfect score:
                                                                                                                                                    Scoring table:
                                                                                                                                                                                                     Word size :
                                                 OM nucleic
                                                                                                                                                                                                                                                                                              Database :
                                                                                                                                Sequence:
                                                                                                                                                                                Searched:
                                                                    Run on:
```

Sequence 7731, Apple Sequence 17, Appl Sequence 17, Appl Sequence 13, Appl Sequence 17, Appl Sequence 17, Appl Sequence 1816, Appl Sequence 1816, Appl Sequence 2779, Appl Sequence 2185, Appl Sequence 135, Appl Sequence 136, Appl Sequence 136

4 US-10-156-761-1 1 US-10-027-632-162057 1 US-10-156-761-1816 1 US-09-815-242-7925 1 US-10-156-761-4834

1017

US-10-205-032-

US-10-098-841-266 US-10-225-567A-447 US-09-815-242-7731 US-10-205-032-17 US-10-205-032-17 US-09-870-162A-23

US-10-156-761-2779 US-10-033-109-9 US-10-156-761-4155 US-10-156-761-4155 US-10-205-823-135 US-10-205-823-135 US-09-861-886-36 US-09-886-386-36 US-09-836-821-36

2487 4041 4041

1719 1883 1941

Sequence

US-09-860-846-5 US-09-836-821-5 US-09-988-384B-5

36778 36778 37948

98-60-sn

4041

ALIGNMENTS

Sequence Sequence Sequence

> US-09-815-242-7912 Sequence 7912, Ap Sequence 4132, Ap Sequence 1313, Ap Sequence 259, App Sequence 5932, App Sequence 5271, Ap Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution. Description / cgn2\_6/ptodata/1/puppna/US09A\_PUBCOMB.seq:\*
> / cgn2\_6/ptodata/1/pubpna/US09B\_PUBCOMB.seq:\*
> / cgn2\_6/ptodata/1/pubpna/US09B\_PUBCOMB.seq:\*
> / cgn2\_6/ptodata/1/pubpna/US09\_NEW\_PUB.seq:\*
> / cgn2\_6/ptodata/1/pubpna/US09\_NEW\_PUB.seq:\*
> / cgn2\_6/ptodata/1/pubpna/US10\_NEW\_PUB.seq:\*
> / cgn2\_6/ptodata/1/pubpna/US10\_NEW\_PUB.seq:\*
> / cgn2\_6/ptodata/1/pubpna/US10\_NEW\_PUB.seq:\*
> / cgn2\_6/ptodata/1/pubpna/US60\_NEW\_PUB.seq:\*
> / cgn2\_6/ptodata/1/pubpna/US60\_NEW\_PUB.seq:\* /cgn2\_6/ptodata/1/pubpna/US07\_PUBCOMB.seq:\*
> /cgn2\_6/ptodata/1/pubpna/US06\_NEW\_PUB.seq:\*
> /cgn2\_6/ptodata/1/pubpna/US06\_NEW\_PUB.seq:\*
> /cgn2\_6/ptodata/1/pubpna/US06\_NEW\_PUB.seq:\*
> /cgn2\_6/ptodata/1/pubpna/US07\_NEW\_PUB.seq:\*
> /cgn2\_6/ptodata/1/pubpna/US07\_NEW\_PUB.seq:\*
> /cgn2\_6/ptodata/1/pubpna/US08\_NEW\_PUB.seq:\*
> /cgn2\_6/ptodata/1/pubpna/US08\_NEW\_PUB.seq:\*
> /cgn2\_6/ptodata/1/pubpna/US08\_PUBCOMB.seq:\* US-09-815-242-7912 US-09-815-242-4132 US-09-815-242-1313 US-09-741-669-259 US-09-815-242-5932 US-09-815-741-5271 US-10-155-761-5271 US-09-927-827-5 US-09-927-827-1 SUMMARIES

Query Match Length DB

Score

Result Š Sequence 1, Appli Sequence 3485, Ap Sequence 268, App Sequence 263, App Sequence 7015, Ap Sequence 3786, Ap

US-10-156-761-3485 US-10-084-843-268 US-10-103-002-263 US-10-156-761-3785 US-10-156-761-3785

US-10-156-761-1

7356 9025608

Appli Appli

Sequence 5, Appli Sequence 3, Appli Sequence 1, Appli

20 HD APPLICANT: Haselbeck, Kacie L.
APPLICANT: Chisen, Kari L.
APPLICANT: Zyskind, Judith W.
APPLICANT: Zyskind, Judith W.
APPLICANT: Trawick, John D.
APPLICANT: Carr, Grant J.
APPLICANT: Carr, Grant J.
APPLICANT: Ku, H. Howard
TITLE OF INVENTION: Prokaryotes
FILE REFERENCE: ELITRA.011A
CURRENT APPLICATION NUMBER: US/09/815,242
CURRENT FILING DATE: 2001-03-21
PRIOR FILING DATE: 2000-03-21
PRIOR FILING DATE: 2000-05-23
PRIOR PILICATION NUMBER: 60/206,848
PRIOR FILING DATE: 2000-05-26
PRIOR PILING DATE: 2000-05-26
PRIOR PILING DATE: 2000-05-26
PRIOR PILING DATE: 2000-10-23
PRIOR PILING DATE: 2000-11-27
PRIOR PILING DATE: 2000-12-22
PRIOR FILING DATE: 2000-12-22 NUMBER OF SEQ ID NOS: 14110 SOFTWARE: FastSEQ for Windows Version 4.0 Sequence 7912, Application US/09815242 Patent No. US20020061569A1 GENERAL INFORMATION: TYPE: DNA ORGANISM: Pseudomonas aeruginosa APPLICANT: Haselbeck, Robert SEQ ID NO 7912 LENGTH: 1347 FEATURE: ~

ò g g ð 셤 à g à 셤 à g à 셤 ð 셤

à

```
1020
                                                                                                                                                                                                                    1200
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ö
   1201 CTGGACGAAGCAGTCCGGCAGGCCGCCGCGCAGCCGAAGCGATGCGGTGCTTG
                                                                                                                                                                                                                                                                                                                                      CTGGACGAAGCAGTCCGGCAGGCCGCCGAGCTGGCGCGAAGGCGATGCGGTGCTGTTG
                                                   GGTGCCGACATCGACGCCAAGCTGGTGCTGCTCGCCGGCGGGGGGGCGCAAGGGCGCCGAT
                                                                                                                                                                                       1191 GACGCCGGGCTGATTGCCCCAGGCACTGGGCAACGCGGTACCGCTGGTGCGCGTCGCAACG
                                                                                                                                                                                                                                                                                                                       1311 TCGCCGGCCTGCGCGAGCCTGGACATGTTCAAGAACTTCGAAGAACGCGGACGCCTGTTC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         1450
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           1397 ATGCTGTCGGTGTTGCGCCCCTTCCCGTCGCCGCTGTTGAGCCGGCACGGCATC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          .;
0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Length 1200;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           tn
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Genes
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Score 54; DB 9; L
Pred. No. 1.9e-17;
); Mismatches 0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Essential
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 APPLICANT: Haselbeck, Robert
APPLICANT: Ohlsen, Kari L.
APPLICANT: Ohlsen, Kari L.
APPLICANT: Ohlsen, Kari L.
APPLICANT: Wall, Daniel
APPLICANT: Wall, Daniel
APPLICANT: Trawick, John D.
APPLICANT: Trawick, John D.
APPLICANT: Trawick, John D.
APPLICANT: Yamamoto, Robert T.
APPLICANT: Yamamoto, Robert T.
APPLICANT: Wannence, Robert T.
APPLICANT: Wannence, Robert T.
APPLICANT: Wannence, Robert T.
APPLICANT: Wannence, Robert T.
APPLICANT: Would Search TITLE OF INVENTION: Prokaryotes
FILE REFERENCE: ELITRA.011A
CURRENT APPLICATION NUMBER: 60/191,078
PRIOR FILING DATE: 2000-05-23
PRIOR APPLICATION NUMBER: 60/202,727
PRIOR APPLICATION NUMBER: 60/202,727
PRIOR APPLICATION NUMBER: 60/203,625
PRIOR FILING DATE: 2000-10-23
PRIOR APPLICATION NUMBER: 60/257,931
PRIOR PRIUNG DATE: 2000-01-27
PRIOR APPLICATION NUMBER: 60/257,931
                                                                                                                                                                                                                                                                                                                                                                                                        1321 GCCAAAGCCGTAGAGGAGCTAGCGTGA 1347
                                                                                                                                                                                                                                                                                                                                                                                        1371 GCCAAAGCEGTAGAGGAGCTAGCGTGA 1397
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           FastSEQ for Windows Version 4.0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Sequence 4132, Application US/09815242
Patent No. US20020061569A1
GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               3.7%; Scur
100.0%; Pre
0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Pseudomonas aeruginosa
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        NUMBER OF SEQ ID NOS: 14110
SOFTWARE: FastSEQ for Window
SEQ ID NO 4132
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Similarity 100.
54; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                          RESULT 2
US-09-815-242-4132
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          US-09-815-242-4132
                                                                                                                   1131
                                                                                                                                                                                                                      1141
                                                                                                                                                                                                                                                     1251
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Query Match
Best Local S:
Matches 54
                                                   1071
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             TYPE: DNA
ORGANISM:
                                                                                                                                                  g
                                                                                                                                                                                                                                                                                      a
                                                     ò
                                                                                  g
                                                                                                                                                                                       ð
                                                                                                                                                                                                                    요
                                                                                                                                                                                                                                                     ò
                                                                                                                                                                                                                                                                                                                                                      g
                                                                                                                                                                                                                                                                                                                                                                                        ö
                                                                                                                                                                                                                                                                                                                                                                                                                      Q
                                                                                                                   ò
                                                                                                                                                                                                                                                                                                                       ŏ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             õ
                                                                                                    ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        AAGGCGTTTTCCGGCCTGGCTCATCGCTGCCAGTGGGTACGCGAGCGGCAGGGCGTGAGC 1010
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        1011 TACTACGACGATTCCAAGGCCACCAAGGTCGGCGCCCCTGGCGGCGGATCGAGGGGCTG 1070
                                                                                                                                     110
                                                                                                                                                                                                     170
                                                                                                                                                                                                                                     120
                                                                                                                                                                                                                                                                      230
                                                                                                                                                                                                                                                                                                       180
                                                                                                                                                                                                                                                                                                                                        290
                                                                                                                                                                                                                                                                                                                                                                     240
                                                                                                                                                                                                                                                                                                                                                                                                        350
                                                                                                                                                                                                                                                                                                                                                                                                                                       300
                                                                                                                                                                                                                                                                                                                                                                                                                                                                        410
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          530
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       480
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          096
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       360
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        470
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         590
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         540
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          650
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          900
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          710
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         830
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          780
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          840
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           950
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ACCCGACCGCTGATCGCCGATACCGTGCCGTGCTCGTTCGGCCTGAACAAGCCGGAC 770
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        AAGCIGCIGCIGCITGGCGAACIGAAGAICCGIGGCGCCCACAACIAIICCAACGCGCCIC 890
                                                                                                                                                                    9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    TCCCTGGTGCGCTACCTGGCGCGCGCGCGTTGCCTTTCGCCGTGGTCGATACCCGAGAG
                                                                                                                                                                                                                  AGCACCGTGACCACCCTGGTGGGGGAAATGGCGGGTGGCCGGGACAAGCGTGTCGCCGTC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ATGAGCCTGATCGCCTCCGACCACTTCCGCATCGTTGTCGGCCTCGGCAAGAGCGGCATG
                                                                                                                                                                                                                                                                   AACCGCCGGAGCTGGCCACCCTGCGTGCCCAGTATCCGCAGGTGGAAGTGCGTTGCGGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                      GATCTCTTCGCCCGCGAGGCGGAAGGCCCCCGATCGTCGCCATCACCGGTTCCAACGCGAAG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       GTGCTGAACGTCAGCGAAGACCATATGGATCGCTACGACGGCATGGCTGACTACCACCTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    GCCGCGCTGGCGCTGGCCATGCGGTCGGCCTGCCGTTCGACGCCATGCTCGGCGCGCTG
                                                                                                                                                                                                                                                                                                     AACCCGCCGGAGCTGGCCACCCTGCGTGCCCAGTATCCGCAGGTGGAAGTGCGTTGCGGC
                                                                                                                                                                                                                                                                                                                                                                                                      CTGCGCACCCCTGCGCTGGTACAGGCCGCGCGAAAGGCGTGCGCATCTCCGGTGACATC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        GTGCTGAACGTCAGCGAAGACCATATGGATCGCTACGACGGCATGGCTGACTACCACCTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      GCCAAGCACCGGATCTTCCGCGGTGCCCGCCAGGTCGTGGTGAATCGCGCCGATGCCCTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Gaps
                                                                                                      ö
                                                                   Length 1347;
                                                                                                  Indels
                                                                                                  ö
                                                                     6
                                                                     <u>B</u>
                                                               92.9%; Score 1347; D
100.0%; Pred. No. 0;
:ive 0; Mismatches
                                                              Query Match 92.9
Best Local Similarity 100.
Matches 1347; Conservative
; NAME/KEY: CDS
; LOCATION: (1)...(1347)
US-09-815-242-7912
                                                                                                                                                                Н
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       541
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       601
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       661
                                                                                                                                   21
                                                                                                                                                                                                                                                                   171
                                                                                                                                                                                                                                                                                                    121
                                                                                                                                                                                                                                                                                                                                                                    181
                                                                                                                                                                                                                                                                                                                                                                                                                                     241
                                                                                                                                                                                                     111
                                                                                                                                                                                                                                                                                                                                     231
                                                                                                                                                                                                                                                                                                                                                                                                     291
                                                                                                                                                                                                                                                                                                                                                                                                                                                                     351
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     301
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      411
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     361
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      471
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     421
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      591
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      651
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        711
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      771
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         841
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       721
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        831
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       781
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        891
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        951
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         901
```

g

ò

a

ŏ

g

ò 셤 ò

ò

qq

g

ò

g

δ

g

ò

硆

```
ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              DB 9; Length 1317; 0.041;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Length 1083;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Sequence 259, Application US/09741669
Fatent No. US20020022718A1
GENERAL INFORMATION:
APPLICANT: FORSYth, R. Allyn
APPLICANT: Ollsen, Kari L.
APPLICANT: 2yskind, Judith W.
TITLE OF INVENTION: Genes identified as required for TITLE OF INVENTION: PLOISEAUTH OF E. COLIFIE REFERENCE: ELITRA.009AF 100-12-19
FILE REFERENCE: ELITRA.009AF 100-12-19
CURRENT FILING DATE: 1099-12-23
FRIOR APPLICATION NUMBER: US 60/173005
FRIOR APPLICATION NUMBER: US 60/173005
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         1048 GTGCTGATCGGCCTCGCCACCTTGAAGCTGCGTTGA 1083
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              DB 9; Le 3.1e-08;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         37
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         2 GTGCTGATCGGCCTCGCCACCTTGAAGCTGCGTTGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Query Match 2.5%; Score 36; DB Best Local Similarity 100.0%; Pred. No. 3.1 Matches 36; Conservative 0; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Query Match 1.7%; Score 24; DB Best Local Similarity 100.0%; Pred. No. 0.( Matches 24; Conservative 0; Mismatches
                       PRIOR FILING DATE: 2000-05-23
PRIOR FILING DATE: 2000-05-23
PRIOR PELICATION NUMBER: 60/207,727
PRIOR PELICATION NUMBER: 60/2042,578
PRIOR PELICATION NUMBER: 60/253,625
PRIOR PELICATION NUMBER: 60/253,625
PRIOR PELICATION NUMBER: 60/257,931
PRIOR PELING DATE: 2000-11-27
PRIOR FILING DATE: 2000-11-27
PRIOR FILING DATE: 2001-10-26
PRIOR FILING DATE: 2001-10-26
PRIOR FILING DATE: 2001-10-26
NUMBER OF SEQ ID NOS: 14110
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 NUMBER OF SEQ ID NOS: 481
SOFTWARE: FastSEQ for Windows Version 4.0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               537 CTGTCGAGCTTCCAGCTGGAAACC 560
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         475 CTGTCGAGCTTCCAGCTGGAAACC 498
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Sequence 5932, Application US/09815242 Patent No. US20020061569A1
                                                                                                                                                                                                                                                                                                                                                                                                                                            TYPE: DNA ORGANISM: Pseudomonas aeruginosa
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               GENERAL INFORMATION:
APPLICANT: Haselbeck, Robert
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ORGANISM: Escherichia coli
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ) NAME/KEY: CDS
; LOCATION: (1)...(1317)
US-09-741-669-259
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ; LOCATION: (1)...(1083)
US-09-815-242-7913
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    US-09-815-242-5932
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                NAME/KEY: CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           US-09-741-669-259
                                                                                                                                                                                                                                                                                                                                                                                        SEQ ID NO 7913
LENGTH: 1083
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  LENGTH: 1317
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        SEQ ID NO 259
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  TYPE: DNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         FEATURE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       RESULT 6
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            õ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Gaps
1 ATGCTGTCGGTGTTGCGCCCCTTCCCGTCGTCGTTGAGCCGGCACGGCATC 54
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ö
                                                                                                                                                                                                                                                                 APPLICANT: Obligation, Karl L.
APPLICANT: Obligation, Karl L.
APPLICANT: Syskind, Judith W.
APPLICANT: Tradick, John D.
APPLICANT: Tradick, John D.
APPLICANT: Tradick, John D.
APPLICANT: Tammancto, Robert T.
APPLICANT: Xu, H. Howard
TITLE OF INVENTION: Identification of Essential Genes in
TITLE OF INVENTION: 1000-101A
CURRENT PAPLICATION NUMBER: 60/291,078
PRIOR FILING DATE: 2000-05-28
PRIOR APPLICATION NUMBER: 60/206,848
PRIOR FILING DATE: 2000-10-23
PRIOR FILING DATE: 2000-10-23
PRIOR FILING DATE: 2000-11-27
PRIOR APPLICATION NUMBER: 60/253,625
PRIOR FILING DATE: 2000-11-27
PRIOR APPLICATION NUMBER: 60/253,625
PRIOR APPLICATION NUMBER: 60/253,938
PRIOR PILING DATE: 2000-11-27
PRIOR APPLICATION NUMBER: 60/253,938
PRIOR APPLICATION NUMBER: 60/253,938
PRIOR FILING DATE: 2001-02-16
PRIOR PILING DATE: 2001-02-16
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Query Match 2.5%; Score 36; DB 9; Length 116; Best Local Similarity 100.0%; Pred. No. 4.1e-08; Matches 36; Conservative 0; Mismatches 0; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Essential Genes in
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           1415 CCCTTCCCGTCGCCGCTGTTGAGCCGGCACGGCATC 1450
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           116 CCCTTCCCGTCGCCGCTGTTGAGCCGGCACCGCATC 81
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    NUMBER OF SEQ ID NOS: 14110
SOFTWARE: FastSEQ for Windows Version 4.0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     FILE REFERENCE: ELITRA.011A
CURRENT APPLICATION NUMBER: US/09/815,242
CURRENT FILING DATE: 2001-03-21
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            APPLICANT: Ohlsen, Kari L.
APPLICANT: Zyskind, Judith W.
APPLICANT: Wall, Daniel
APPLICANT: Travick, John D.
APPLICANT: Yamanoto, Robert T.
APPLICANT: Xamanoto, Robert T.
APPLICANT: Xumanoto, Robert T.
TITLE OF INVENTION: Identification of Estimate Of INVENTION: Prokaryotes
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Sequence 7913, Application US/09815242 Patent No. US20020061569A1
                                                                                                                                                               Sequence 1313, Application US/09815242
Patent No. US20020061569A1
GENERAL INFORMATION:
APPLICANT: Haselbeck, Robert
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            PRIOR APPLICATION NUMBER: 60/191,078 PRIOR FILING DATE: 2000-03-21
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Pseudomonas aeruginosa
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              GENERAL INFORMATION:
APPLICANT: Haselbeck, Robert
                                                                                                                                     US-09-815-242-1313/c
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         US-09-815-242-1313
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   RESULT 4
US-09-815-242-7913
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ORGANISM:
```

ò <u>a</u> ö

Gaps

ö

Gaps

ö

```
APPLICANT: BOWEr, Stanley G.
APPLICANT: Bower, Stanley G.
APPLICANT: Ramseier, Thomas M.
TITLE OF INVENTION: Directed Genetic Engineering of Xanthomonas campestris
FILE REFERENCE: 38-10 (1584.)B
CURRENT APPLICATION NUMBER: US/09/927,827
CURRENT APPLICATION NUMBER: US 60/279,493
PRIOR FILING DATE: 2001-03-28
NUMBER OF SEQ ID NOS: 69
LENGTH: 2730
                                                                                                                             Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   APPLICANT: Hogan, Kevin T.
APPLICANT: Hogan, Mark M.
TITLE OF INVENTION: C-SKI Oncogene-Derived Peptides for Prevention,
TITLE OF INVENTION: Treatment and Diagnosis of Cancer
FILE REFERENCE: 26747-27
CURRENT APPLICATION NUMBER: US/09/753,831
CURRENT FILING DATE: 2001-01-03.
                                                                                                                          ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ö
                                                                         DB 14; Length 1425; 4.5;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 1.4%; Score 20; DB 11; Length 2730; 100.0%; Pred. No. 4.1; 1.1ve 0; Mismatches 0; Indels (
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            DB 10; Length 3511; 4;
                                                                                                                          0; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           0; Indels
                                                          1.4%; bcc.
100.0%; Pred. No.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              .; LOCATION:.(1)..(2730)
; OTHER INFORMATION: unsure at all n locations US-09-927-827-5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Query Match 1.4%; Score 20; DB Best Local Similarity 100.0%; Pred. No. 4; Matches 20; Conservative 0; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   UMBER: U.S. 60/174296
2000-01-03
                                                                                                                                                                       1094 GGTGCTGCTCGCCGGGGAG 1113
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          1464 CCTGCTGGCCGACGACATCG 1445
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1268 GCAGGCCGCCGAGCTGGCCC 1287
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    500 CCTGCTGGCCGACGACATCG 519
                                                                                                                                                                                               60 GGTGCTGCTGCCGGGAG 79
                                                                                                                                                                                                                                                                                                                US-09-927-827-5/c
; Sequence 5, Application US/09927827
; Publication No. US20030036176A1
; GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Sequence 3, Application US/09753831; Patent No. US20020137683A1; GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   TYPE: DNA ORGANISM: Xanthomonas campestris
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Patentin Ver. 2.1
                                                                       Query Match
Best Local Similarity 100.0
Matches 20; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Ouery Match
Best Local Similarity 100.
Matches 20; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     PRIOR APPLICATION NUMBER:
PRIOR FILING DATE: 2000-0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ; TYPE: DNA
; ORGANISM: Homo sapiens
US-09-753-831-3
    ; LOCATION: (1)..(1425)
US-10-156-761-5271
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    NUMBER OF SEQ ID NOS:
SOFTWARE: Patentin Ve
SEQ ID NO 3
LENGTH: 3511
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        NAME/KEY: unsure
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           US-09-753-831-3/c
                                                                                                                                                                         ð
                                                                                                                                                                                                                g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        õ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1.7%; Score 24; DB 9; Length 1317;
100.0%; Pred. No. 0.041;
1ve 0; Mismatches 0; Indels
                                                                                                                                    APPLICANT: Xu, H Howard

TITLE OF INVENTION: Identification of Essential Genes in
TITLE OF INVENTION: Prokaryotes
FILE REFERENCE: ELITRA.011A
CURRENT APPLICATION NUMBER: US/09/815,242
CURRENT FILING DATE: 2001-03-21
PRIOR APPLICATION NUMBER: 60/206,848
PRIOR APPLICATION NUMBER: 60/206,848
PRIOR FILING DATE: 2000-05-23
PRIOR APPLICATION NUMBER: 60/207,727
PRIOR FILING DATE: 2000-05-26
PRIOR FILING DATE: 2000-10-23
PRIOR FILING DATE: 2000-10-23
PRIOR FILING DATE: 2000-10-23
PRIOR FILING DATE: 2000-11-22
PRIOR APPLICATION NUMBER: 60/25,931
PRIOR PILING DATE: 2000-12-16
NUMBER OF SEQ ID NOS: 14110
SOFTWARE: PRESEEDE fOR WINGOWS VERSION 4.0
SEQ ID NO 5932
LENGTH: 1317
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Query Match 1.7%; Score 24; DB Best Local Similarity 100.0%; Pred. No. 0.0 Matches 24; Conservative 0; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  APPLICANT: INFORMATION:
APPLICANT: IKEDA, HARUO
APPLICANT: IKEDA, HARUO
APPLICANT: ISHIKAWA, JUN
APPLICANT: BHIRAWA, JUN
APPLICANT: SHIRAWA, HROSHI
APPLICANT: SHIBA, TADAYOSHI
APPLICANT: SHIBA, TADAYOSHI
APPLICANT: SHIBA, TADAYOSHI
APPLICANT: HATTORI, MASAHIRA
ITILE OF INVENTION: NOVEL POLYNUCLEOTIDES
FILE REFERENCE: 249-222
CURRENT APPLICATION NUMBER: US/10/156,761
CURRENT FILING DATE: 2001-05-30
PRIOR FILING DATE: 2001-05-30
PRIOR FILING DATE: 2001-05-30
PRIOR FILING DATE: 2001-06-30
PRIOR FILING DATE: 2001-06-30
PRIOR FILING DATE: 2001-08-02
NUMBER OF SEQ ID NOS: 15109
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     537 CTGTCGAGCTTCCAGCTGGAAACC 560
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  475 CTGTCGAGCTTCCAGCTGGAAACC 498
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Sequence 5271, Application US/10156761 Publication No. US20030119018A1 GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        TYPE: DNA ORGANISM: Streptomyces avermitilis
                                                                                                                     Yamamoto, Robert T.
Ohlsen, Kari L.
Zyskind, Judith W.
Wall, Daniel
                                                                    Trawick, John D.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ORGANISM: Escherichia coli
                                                                                               Carr, Grant J.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ; NAME/KEY: CDS
; LOCATION: (1)...(1317)
US-09-815-242-5932
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              US-10-156-761-5271
                                                                                                                   APPLICANT:
APPLICANT:
                                                                                               APPLICANT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ò
```

ö

셤

```
Campos Neto, Antonio
Raymond
Vedvick, Thomas S.
Twardzik, Daniel R.
Lodes, Michael J.
Hendrickson, Ronald C.
TITLE OF INVENTION: COMPOUNDS AND METHODS FOR IMMUNOTHERAPY
AND DIAGNOSIS OF TUBERCULOSIS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              DB 14; Length 393;
17;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      CORRESPONDENCE ADDRESS:
ADDRESSEE: SEED and BERRY LLP
STREET: 6300 Columbia Center, 701 Fifth Avenue
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      OPERATING SYSTEM: PC-DOS/MS-DOS
SOFTWARE: PatentIn Release #1.0, Version #1.30
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   1.3%; Score ...
100.0%; Pred. No. 17;
...ive 0; Mismatches
                                                                                                                                                                                                                           APPLICANT: ISHLKAWA, JUN
APPLICANT: ISHLKAWA, HIROSHI
APPLICANT: HORIKAWA, HIROSHI
APPLICANT: SATARI, YOSHIYUKI
APPLICANT: SARAKI, YOSHIYUKI
APPLICANT: HATTORI, MASAHIRA
TITLE OF INVENTION: NOVEL POLYNUCLEOTIDES
CURRENT APPLICATION NUMBER: US/10/156,761
CURRENT FILING DATE: 2002-05-29
PRIOR FILING DATE: 2001-05-30
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/10/084,843
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                PRIOR APPLICATION NUMBER: JP 2001-272697
PRIOR FILING DATE: 2001-08-02
NUMBER OF SEQ ID NOS: 15109
SEQ ID NO 3485
LENGTH: 393
       6407532 GGTGCTCGCCGGCGGAG 6407513
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   COMPUTER: IBM PC compatible
                                                                                                                   Sequence 3485, Application US/10156761
Publication No. US20030119018A1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Sequence 268, Application US/10084843 Publication No. US20030143243A1 GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              TYPE: DNA ORGANISM: Streptomyces avermitilis
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   1270 AGGCCGCCGAGCTGGCCCG 1288
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Skeiky, Yasir A.W.
Dillon, Davin C.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ZIP: 98104-7092
COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy disk
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              143 AGGCCGCCGAGCTGGCCCG 161
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              APPLICANT: Reed, Steven G.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 NUMBER OF SEQUENCES: 355
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          CITY: Seattle
STATE: Washington
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Query Match 1.3
Best Local Similarity 100.
Matches 19; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     COUNTRY: USA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ; LOCATION: (1)..(393)
US-10-156-761-3485
                                                                      RESULT 12
US-10-156-761-3485
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   NAME/KEY: CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       US-10-084-843-268
       셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      õ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ö
                                                             RESULT 10
1S-09-927-827-1/C
1S-09-927-827-1/C

Sequence 1, Application US/09927827

Publication No. US20030036176A1

SEQUENCE 1. INFORMATION:

APPLICANT: BOWER, Stanley G.

TITLE OF INVENTION:

FILE REFRENCE: 38-10(15824.)B

CURRENT APPLICATION NUMBER: US/09/927,827

CURRENT FILING DATE: 2001-08-10

PRIOR APPLICATION NUMBER: US 60/279,493

PRIOR FILING DATE: 2001-03-28

NUMBER OF SEQ ID NOS: 69
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  1.4%; Score 20; DB 14; Length 9025608; 100.0%; Pred. No. 1.4; tive 0; Mismatches 0; Indels 0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 1.4%; Score 20; DB 11; Length 7356; 100.0%; Pred. No. 3.6; Live 0; Mismatches 0; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 NAME/KEY: misc_feature

: LOCATION: (4187715)

: OTHER INFORMATION: a, t, c, g, other or unknown

US-10-16-761-1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ; LOCATION: (1)..(7356); OTHER INFORMATION: unsure at all n locations US-09-927-827-1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          APPLICANT: SHIBA, TADAYOSHI
APPLICANT: SHIBA, TADAYOSHI
APPLICANT: SAKAKI, YOSHIVUKI
TITLE OF INVENTION: MASAHIRA
TITLE OF INVENTION: NOVEL POLYNUCLEOTIDES
FILE REFERENCE: 249-262
CURRENT APPLICATION NUMBER: US/10/156,761
CURRENT FILING DATE: 2002-05-29
PRIOR APPLICATION NUMBER: JP 2001-204089
PRIOR FILING DATE: 2001-05-30
PRIOR FILING DATE: 2001-08-02
NUMBER OF SEQ ID NOS: 15109
SEQ ID NO I
LENGTH: 9025608
2507 GCAGGCCGCCGAGCTGGCCC 2488
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1094 GGTGCTGCTCGCCGGGAG 1113
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  6090 CCTGCTGGCCGACGACATCG 6071
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        500 CCTGCTGGCCGACGACATCG 519
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ORGANISM: Streptomyces avermitilis
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Sequence 1, Application US/10156761 Publication No. US20030119018A1 GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                TYPE: DNA
ORGANISM: Xanthomonas campestris
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           IKEDA, HARUO
ISHIKAWA, JUN
HORIKAWA, HIROSHI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Query Match 1.45
Best Local Similarity 100.0
Matches 20; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Query Match
Best Local Similarity 100.0
Matches 20; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        APPLICANT: OMURA, SATOSHI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  NAME/KEY: unsure
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     RESULT 11
US-10-156-761-1/c
                                                                                                                                                                                                                                                                                                                                                                                    SEQ ID NO 1
LENGTH: 7356
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      TYPE: DNA
```

g

ä

ö

ö

Gaps

ö

```
Length 648;
                                                                                                                                                                                                                                  Length 522;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            DB 14;
16;
                                                                                                                                                                                                                             1.3%; Score 19; DB 12;
100.0%; Pred. No. 17;
tive 0; Mismatches 0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            100.0%; Preu. ...
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  APPLICANT: SHIBA, TADAYOSHI
APPLICANT: SHIBA, TADAYOSHI
APPLICANT: SHRAKI, VOSHIYUKI
APPLICANT: HATTORI, MASAHIRA
FILE REPERENCE: 249-262
CURRENT FILING DATE: 2002-05-29
CURRENT FILING DATE: 2002-05-29
PRIOR PAPLICATION NUMBER: JP 2001-204089
PRIOR PILING DATE: 2001-05-30
PRIOR FILING DATE: 2001-05-30
PRIOR FILING DATE: 2001-05-30
FRIOR FILING DATE: 2001-05-30
SEQ ID NO 7015
                                                                                                    TOPOLOGY: linear

MOLECULE TYPE: CDNA
SEQUENCE DESCRIPTION: SEQ ID NO: 263: US-10-193-002-263
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Search completed: August 14, 2003, 07:13:43
Job time : 437 secs
                                                                                                                                                                                                                                                                                                                                                                                                                                                           ; Sequence 7015, Application US/10156761
; Publication No. US20030119018A1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 TYPE: DNA ORGANISM: Streptomyces avermitilis
                                                                                                                                                                                                                                                                                                                1082 CGACGCCAAGCTGGTGCTG 1100
                                                                                                                                                                                                                                                                                                                                          429 CGACGCAAGCTGGTG 447
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         546 CGTGCTGATCGGCCTCGCC 564
                                                               LENGTH: 522 base pairs
TYPE: nucleic acid
STRANDEDNESS: single
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 1 CGTGCTGATCGGCCTCGCC 19
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ISHIKAWA, JUN
HORIKAWA, HIROSHI
                     INFORMATION FOR SEQ ID NO:
                                                                                                                                                                                                                             Query Match
Best Local Similarity 100.
Matches 19; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Best_Local Similarity 100.
Matches 19; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ; LOCATION: (1)..(648)
US-10-156-761-7015
                                                                                                                                                                                                                                                                                                                ò
                                                                                                                                                                                                                                                                                                                                                       g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Hendrickson, Ronald C.
TITLE OF INVENTION: COMPOUNDS AND METHODS FOR DIAGNOSIS OF
TUBERCULOSIS
                                                                                                                                                                                                                                                                                                                                                                                                                                                             Length 522
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         COMPUTER READABLE FORM:
MEDIUM TYPE: FLOPPY disk
COMPUTER: IBM PPC Compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
SOFTWARE: PatentIn Release #1.0, Version #1.30
CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/10/193,002
FILING DATE: 10-Jul-2002
CLASSIFICATION: <Unknown>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            STREET: 6300 Columbia Center, 701 Fifth Avenue
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                         DB 12;
17;
                                                                                                                                                              REFERENCE/DOCKET NUMBER: 210121.411C9
TELECOMMUNICATION INFORMATION:
TELEPHONE: (206) 622-4900
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     REFERENCE/DOCKET NUMBER: 210121.417C9
TELECOMMUNICATION INFORMATION:
TELEPHONE: (206) 622-4900
                                                                                                                                                                                                                                                                                                                                                                                                                                                       Query Match 1.3%; Score 19; DB Best Local Similarity 100.0%; Pred. No. 17; Matches 19; Conservative 0; Mismatches
                 CLASSIFICATION: <Unknown>
PRIOR APPLICATION DATA:
APPLICATION NUMBER: US/09/072,967
FILING DATE: 05-MAY-1998
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               APPLICATION NUMBER: US/09/072,596 FILING DATE: 05-MAY-1998 ATTORNEY/AGENT INFORMATION:
                                                                                                                                                                                                                                                                                                                                        TOPOLOGY: LINEAR MOLECULE TYPE: CDNA SEQUENCE DESCRIPTION: SEQ ID NO: 268: US-10-084-843-268
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   CORRESPONDENCE ADDRESS:
ADDRESSEE: SEED and BERRY LLP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Skelky, Yasir A.W.
Dillon, Davin C.
Campos-Neto, Antonia
Houghton, Raymond
Vedvick, Thomas S.
Twardzik, Daniel R.
Lodes, Michael J.
                                                                                                 ATTORNEY/AGENT INFORMATION:
NAME: Maki, David J.
REGISTRATION NUMBER: 31,392
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    REGISTRATION NUMBER: 31,392
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Sequence 263, Application US/10193002 Publication No. US20030135026A1 GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1082 CGACGCCAAGCTGGTGCTG 1100
FILING DATE: 25-Feb-2002
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               429 CGACGCCAAGCTGGTGCTG 447
                                                                                                                                                                                                                           TELEFAX: (206) 682-6031 INFORMATION FOR SEQ ID NO:,268: SEQUENCE CHARACTERISTICS:
                                                                                                                                                                                                                                                                                                          TYPE: nucleic acid
STRANDEDNESS: single
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              PRIOR APPLICATION DATA:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        STATE: Washington
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  NUMBER OF SEQUENCES:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         COUNTRY: USA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ద
```

ö

Gaps

```
AX19176 Sequence
AE005185 Escherich
AE000118 Escherich
AE004310 Vibrio ch
AE008699 Salmonell
AX191720 Sequence
X55034 E. coli 2 m
Continuation (12 o
Continuation (13 o
D10483 Escherichia
AC073937 Mus muscu
                                                                                                                                                                                                                                                                                                   AY008276 Pseudomon
AE016779 Pseudomon
AE016871 Pseudomon
AX067460 Sequence
                                                                                                                                                                                                                                                                                                                                                AX189058 Sequence
X17609 Escherichia
X51584 Escherichia
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                AB063521 Wiggleswo
M30807 Escherichia
                                                                                                                                                                                                                                                                                      AE004856 Pseudomon
                                                                                                                                                                                                                                                                                                                                                                                                     Haemophilus
                                                                                                                                                                                                                                                                                                                                                                                        AE015046 Shigella
                                                                                                                                                                        Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Continuation (9
                                                                                                                                                                                                                                                                Description
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        AJ414143
AE016960
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             AE013119
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          AE016978
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              AE016798
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               AB052554
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              AL646072
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ALIGNMENTS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                           AX191720
EC2MIN
AR274513_11
AR274513_12
                                                                                                                                                                                                                           SUMMARIES
                                                                                                                                                                                                                                                                                                                                                                            ECMUROY
AE015046
                                                                                                                                                                                                                                                                                                                                        AX067460
AX189058
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  AB063521
                                                                                                                                                                                                                                                                                                                           AE016871
                        em_htg_inv:*
em_htg_other:*
em_htg_mus:*
                                                                                                                                                   em_htgo_other:*
                                                             em_htg_pln:*
em_htg_rod:*
em_htg_mam:*
                                                                                                                        em_htgo_hum:*
em_htgo_mus:*
             em_htg_hum:*
                                                                                                  em_htg_vrt:*
                                                                                                                                                                                                                                                   Query
Match Length DB
                                                                                                                                                                                                                                                                                      24000
5280
                                                                                                                                                                                                                                                                                                               301995
311600
96109
                                                                                                                                                                                                                                                                                                                                                                                       11441
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   10629
11683
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              111408
248308
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 110000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         28277
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     110000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       14643
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     51050
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  259498
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           290029
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              301442
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                316050
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  348600
                                                                                                                em_sy:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               100.0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Score
                                                                                                                                                                                                                                                  Result
No.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             RESULT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        MODEL-frame+_p20.model.-DEV=xlp
-Q=CGGD2_1/VGSPTQ_spool_/VGS09701229/runat_09082003_161236_5021/app_query.fasta_1.647
-Q=CGGD2_1/VGSPTQ_spool_/VGS09701229/runat_09082003_161236_5021/app_query.fasta_1.647
-Q=CGGD2_1/VGSPTQ_spool_/VGSPTX=-O11p2n.rge -MINNATCH=0.1 -LOOPEXT=0
-UNITS=bits -START=1 -END=-1 -MATRIX=O11go -TRANS=human40.cd1 -LIST=45
-DOOALIGN=200 -THR_SCORE_quality -THR_MIN=1 -ALIGN=15 -MODE=LOCAL -OUTFMT=pto
-USER=USO9701229_@CGN_11_5265_@runat_09082003_161236_5021 -NCPU=6 -ICPU=3
-NOAM=xr -HEARGEQUERY -NGG_SCORES=0 -WAIT -DSPBLOCK=100 -LONGLOG
-DEV_TIMEOUT=120 -WARN_TIMEOUT=30 -THREADS=1 -XGAPOP=60 -XGAPEXT=60 -FGAPOP=6
-FGAPEXT=7 -YGAPOP=60 -YGAPEXT=60 -DELOP=6 -DELEXT=7
                                                                                                (without alignments)
4324.566 Million cell updates/sec
                                                                                                                                                               448
                                                                                                                                                 448
1 MSLIASDHFRIVVGLGKSGM.....MFKNFEERGRLFAKAVEELA
                                                                                   August 14, 2003, 08:41:46; Search time 4238 Seconds
           GenCore version 5.1.6
Copyright (c) 1993 - 2003 Compugen Ltd.
                                                             - nucleic search, using frame_plus_p2n model)
                                                                                                                                                                                                                                                                                                            Total number of hits satisfying chosen parameters:
                                                                                                                                                                                                                                                               2888711 seqs, 20454813386 residues
                                                                                                                                                                                                                                                                                                                                                                           Post-processing: Listing first 45 summaries
                                                                                                                                                                                                 t 60.0
t 60.0
t 7.0
. 7.0
                                                                                                                                                                                                 , Ygapext 6
, Ygapext 6
, Fgapext
, Delext
                                                                                                                                                                                                                                                                                                                                     Minimum DB seq length: 25 /
Maximum DB seq length: 200000000
                                                                                                                                      US-09-701-229-2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      gb_pl:*
gb_pr:*
gb_ro:*
gb_sts:*
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         em_fun:*
em_hum:*
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   em_ro:*
em_sts:*
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      gb_sy:*
gb_un:*
gb_vi:*
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                em_pat:*
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    gb_om:*
gb_ov:*
gb_pat:*
gb_ph:*
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       em_or:*
em_ov:*
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          em_ph:*
em_pl:*
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             gb_htg:*
gb_in:*
                                                                                                                                                                                                60.0
60.0
6.0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            em_ba:*
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  em_in:*
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               em_mu:*
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           em_om:*
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             em_un:*
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 qb_ba:*
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    GenEmbl:*
                                                                                                                                                                                                                                                                                                                                                                                                   Command line parameters:
                                                                                                                                                                                                 Xgapop
                                                                                                                                                                                                                          Fgapop
Delop
                                                                                                                                                                                     OFICO
                                                                                                                                                 Perfect score:
                                                                                                                                                                                     Scoring table:
                                                             OM protein
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Database :
                                                                                                                                                                                                                                                                                       Word size:
                                                                                                                                                               Sequence:
                                                                                                                                                                                                                                                               Searched:
                                                                                     Run on:
                                                                                                                                      Title:
```

Mus muscu Salmonell

Mus muscu

Escherich Shigella

Vibrio vu Heliobaci

Vibrio pa Nitrosomo

Buchnera

Pasteurel

Yersinia

Shewanel] Shewanell Yersinia Coxiella

Neisseria

Ralstonia

Escherich

Salmonell

```
gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  CDS
                            AE004856 24000 bp DNA linear BCT 19-FEB-2003
Pseudomonas aeruginosa PAO1, section 417 of 529 of the complete
                                                                                                                                                                                                                                                                                                  Pseudomonadaceae; Pseudomonas.

1 (bases 1 to 24000)

Stover, C. Pham, X. O. T. Erwin, A. L., Mizoguchi, S. D., Warrener, P.,
Hickey, M. J., Brinkman, F. S. L., Hufnagle, W. O., Kowalik, D. J.,
Lagrou, M., Garber, R. L., Goltry, L., Tolentino, E.,
Westbrock-Radman, S., Yuan, Y., Brody, L. L., Coulter, S. N.,
Wong, G. K. S., Wu, Z. and Paulsen, I. T.
Complete, genome sequence of Pseudomonas aeruginosa PA01, an
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Class 1: Function experimentally demonstrated in P. aeruginosa.
Class 1: Function of highly similar gene experimentally
demonstrated in another organism (and gene context consistent
in terms of pathways its involved in, if known).
Class 3: Function proposed based on presence of conserved amino
acid motif, structural feature or limited sequence similarity
to an experimentally studied gene.
Class 4: Homologs of previously reported genes of unknown function,
or no similarity to any previously reported sequences.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Stover, C.K., Pham, X.-Q.T., Erwin, A.L., Mizoguchi, S.D., Warrener, P., Hickey, M.J., Brinkman, F.S.L., Hufnagle, W.O., Kowalik, D.J., Lagroul, M., Garber, R.L., Goltry, L., Tolentino, E., Westbrock-Wadman, S., Yuan, Y., Brody, L.L., Coulter, S.N., Folger, K.R., Kas, A., Larbig, K., Lim, R.M., Smith, K.A., Spencer, D.H., Wong, G.K.-S., Wu, Z., Paulsen, I.T., Reizer, J., Saier, M.H., Hancock, R.E.W., Lory, S. and Olson, M.V.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              updated, reviewed, Pseudomonas aeruginosa PAOI genome annotation, from PseudoCAP (see http://www.pseudomonas.com for latest updates and links to alternate annotations). PseudoCAP is coordinated by Fiona S.L. Brinkman (Simon Fraser University, Canada) and Robert E.W. Hancock (University of British Columbia, Canada). We welcome submission through www.pseudomonas.com of any proposed changes.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Submitted (16-MAY-2000) Department of Medicine and Genetics, University of Washington Genome Center, University Of Washington, Box 352145, Seattle, WA 98195, USA (bases 1 to 24000)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     This represents the February 3, 2003 version of the continually
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         'Protein name confidence' is used to rate our confidence of the
                                                                                                                                                                                                                                                                         Bacteria; Proteobacteria; Gammaproteobacteria; Pseudomonadales;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Pseudomonas aeruginosa Community Annotation Project (PseudoCAP)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Direct Submission
Submitted (04-FEB-2003) Department of Molecular Biology and
Biochemistry, Simon Fraser University, 8888 University Dr.,
Burnaby, British Columbia V5A 1S6, Canada
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  /organism="Pseudomonas aeruginosa PAO1"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Opportunistic pathogen
Nature 406 (6799), 959-964 (2000)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        /mol_type="genomic DNA" /strain="PAO1"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            /db_xref="taxon:208964"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        complement(91. .1308)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                complement(91, .1308)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       /gene="argJ"
/locus_tag="PA4402"
                                                                                                                                                                                                                Pseudomonas aeruginosa PAO1
                                                                                                                                                                                                                                                   PA01
                                                                                                                   ĀE004856 AE004091
AE004856.1 GI:9950633
                                                                                                                                                                                                                                                   aeruginosa
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    (bases 1 to 24000)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      1. .24000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Direct Submission
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        10984043
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         source
AE004856/c
                                                        DEFINITION
                                                                                                                                                                                                                                         ORGANISM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   MEDLINE
PUBMED
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        TITLE
JOURNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           AUTHORS
CONSRIM
TITLE
JOURNAL
                                                                                                                      ACCESSION
                                                                                                                                               VERSION
KEYWORDS
SOURCE
                                                                                                                                                                                                                                                                                                                                 REFERENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           gene
                                                                                                                                                                                                                                                                                                                                                                AUTHORS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 REFERENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    AUTHORS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               REFERENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          JOURNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      FEATURES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               TITLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         COMMENT
```

```
AGVAETSVLPYSTGVIGEPLPVAKIEAALPAALADLAEDRWAEĀAAGIWTJDTLPKGA
SRQFYHDGWTWTYTGISKGAGMIKPNWATMLGYIATDAKVAGGVLQDLLRDANKSFN
RITIGGDTSTNDCCMLIATGRAALPEVTQASGALFAALKQAVLEVSMELAQAIVRDGE
GATKRYTVQVNGGATHQECLDYGXAVHSPLIKTALFASDPWMGRILAAVGRAGVANL
DVSKIDVFLGDVCIASRGGRAASYTEEQGAAVWAQAEIGIRIELGRGTCSETIWTTDL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                RIGEGKTLVGTLPVYLNALSGKGVHVVTVNDYLARRDANWMRPLYEFIGLSVGVVTPF
OPPEDKRAAADITYGTWNBEFDYLDLANDMARFSLDKKGRELNFAVVDENDSTILDE
ARPELISGQAEDSERLYKINKLIPRILKOVEEVEGRFTEGHYSTDEKTROVELNE
OGHOFIEDLLSQNGLLGEGESLYSAHNLSLLTHVYAALRAHTLFHRNVEYIVGGDOIL
LIDEHTGKRELSGLHQALEARSCHIPOLASGOTLASTFONYFRYNKTYKNKLGHT
TADDEFAFERROIYGLHOATEARSCHIPOLASGOTLASTFONYFRYNKTYKNKLGHT
TADDEAFEFROIYGLHOATEARSCHIPOLASTFONYFRYDNYFRYDY
TADTEAFEFROIYGLGHOATEARSTHOATEARSTHOATEARSTHOATEART
TADTEAFEFROIYGLGHOATEARSTHOATEARSTHOATEARSTHOATEART
TADTEAFEFROIYGLGHOATEARSTHOATEARSTHOATEART
                                                                                                                                                                                                                                                                                                                                                                                                                                     /translation="MAVGLGPLSTLHPVPGFELGIASAGIKRPGRKDVVVMRCAEGSS
VAGVFTLNAFCAAPVTLAKQRFLGEVRYLLTNTGNANAGTGEAGLAAAAQTCAKLAEL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         RGTDILLGGNWEVEVAALENPTEEQIAQIKAEWQKRHQQVIEAGGLHVIASERHESRR
IDNQLRGRAGRQGDPGSSRFYLSLEDNLMRIFASDRVKNFMKALGMQSGEAIEHRWYT
NAIEKAQRKVEGRNFDIRKQLLEFDDVANEQRKVIYHMRNTLLSAEDVGETIKEFREE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     TLSATINOHIPPOSLPEQWDIEGLEAALYSDFAVRLPIQQWLDEDDKLYEETLRSKIL
EQIVAAYYEKEELAGAEALRAFEKQMLLRVLDDLWKDHLSTWDHLRHGIHLRGYAQKN
PKQEYKRESFTLFQELLDSIKRDTIRVLSHVQVRREDPAEEEARLRREAEELAKRWQF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               /db_xref="GI:9950635"
/translation="MPAPLIKKLFGSKNERDVKRMAKAVQAINALEPQMVALSDEQLK
AKTAEFQQRYAKGETLDQLLPEAFAVVREAGKRVMGMRHFDVQLIGGMTLHDGKIAEM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           /translation-"MHITFLSRHHGAARSVHLOPRLLMLAGACVVGASLLAGGFMGAW
LFRAPAPVAGIEVDAALQAQSAEISSAREDAQRQMDALSVHLGELQARLVRLDALGER
LTELADVDPDEFDFSLSVGQGGVDEPLEGSAYAPPSFMATLDELAARLDTREQQLEVL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            EQLLADKHISQSTYLAGQPYRQGYISSPFGRRVNPVSGRLSMHKGIDFAAPAGSDVVA
VAAGVVTWSGRKNGYGNVVEVGHADGYTTLYAHNQKNLVEVGDLVKRGQVLAKYGSTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     QHAEAPSMEQAVAGEEEELPEGPAPVVPLEPVRNEQKIGRNEPCPCGSGKKYKHCHGQ
/locus_tag="PA4402"
/note="Protein name confidence: Class 2 (high similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       /locus_tag="PA4403"
/note="Protein name confidence: Class 2 (high similarity
to functionally studied protein)"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          9 6
                                                                                to functionally studied protein); Subcellular localization confidence: Cytoplasmic; Subcellular localization confidence: Class 2; Alt protein name: ornithine
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            /locus_tag="PA4405"
/note="Protein name confidence: Class 4 (homologs of
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              complement(4339..5262)
/locus_tag="PA4404"
/note="Protein name confidence: Class 4 (homologs previously reported genes of unknown function, or similarity to any previously reported sequences)"
                                                                                                                                                                                                                                                                            /transl_table=11
product="qutamate N-acetyltransferase"
/protein_id="AAG07790.1"
/db_xref="d1:9950634"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           /product="secretion protein SecA"
/protein_id="AAG07791.1"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            RSTGYHVHFEVMKDGRVMNPQSFIARASVSE"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           /product-"hypothetical protein"
/protein_id-"AAG07792.1"
/db_xref-"GI:9950636"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  complement(1455. .4205)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  complement(1455. .4205)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          /locus_tag="PA4403"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    /locus_tag="PA4405"
5409. .5804
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  complement(4339. .5
/locus_tag="PA4404"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   /transl_table=11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   /transl_table=11
                                                                                                                                                                                                            transacetylase"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              SHEYVKINAEYRT"
                                                                                                                                                                                                                                                /codon_start=1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               /codon_start=1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       /codon_start=1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      /gene="secA"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          /gene="secA"
```

16086

9

80

```
15485 AAGCTGCCGGTTGGCGAACTGAAGATCCGTGGCGCCCACAACTATTCCAACGCGCTC 15426
                                                                                                                                                                               LeuGluLeuSerSerPheGlnLeuGluThrCysAspArgLeuAsnAlaGluValAlaThr 180
                                                                                                                        LeuArgThrProAlaLeuValGlnAlaAlaAlaAlaAgglyValArgIleSerGlyAspIle 100
                                                                                                                                                                                                                                                                                                                                                                                                         15605 ACCCGACCGCTGATCGCCGATACCGTGCCGTGCTGGTTCGGCCTGAACAAGCCGGAC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              281 AlaAlaLeuAlaLeuGlyHisAlaValGlyLeuProPheAspAlaMetLeuGlyAlaLeu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              TyrTyrAspAspSerLysAlaThrAsnValGlyAlaAlaLeuAlaAlaIleGluGlyLeu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               PheHisAspLeuArgGluProValAlaArgPheCysArgAlaValValLeuLeuGlyArg
                             ThrArgProLeulleAlaAspThrValProCysTrpSerPheGlyLeuAsnLysProAsp
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        LysLeuLeuProValGlyGluLeuLysIleArgGlyAlaHisAsnTyrSerAsnAlaLeu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          TTCCATGACCTGCGCGAGCCGGTCGCGCGCTTCTGCCGGGCGGTGGTACTGCTTGGCCGT
                                                                                                                                                                                                                                                                                               GlyGlyAsnLeuGlyThrProAlaLeuAspLeuLeuAlaAspAspIleGluLeuTyrVal
                                                                     GluLeuAspAlaGluPheLeuCysSerAlaArgGluLeuTyrValSerProGlyLeuSer
                                                                                                                                                                                                                                       SerThrValThrLeuValGlyGluMetAlaValAlaAlaAspLysArgValAlaVal
              AsnProProGluLeuAlaThrLeuArqAlaGlnTyrProGlnValGluValArgCysGly
                                       16145
                                                                                                                                                                                                                                                                                                                                                                                                            181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              321
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 15245
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             361
                                                                                                                          81
                                                                                                                                                                                  101
                                                                                                                                                                                                                                                                   15905
                                                                                                                                                                                                                                                                                               141
                                                                                                                                                                                                                                                                                                                                                      161
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           221
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        261
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      341
              41
                                                                   61
                                                                                                                                                      16025
                                                                                                                                                                                                           15965
                                                                                                                                                                                                                                        121
                                                                                                                                                                                                                                                                                                                                                                               15785
                                                                                                                                                                                                                                                                                                                                                                                                                                       15725
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         15185
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      381
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 15125
                                                                                                                                                                                                                                                               QQ
                                                                                                                                                                                                                                                                                                                     QQ
                                                                                                                                                                                                                                                                                                                                                                             g
                                                                                                                                                                                                                                                                                                                                                                                                   δ
                                                                                                                                                                                                                                                                                                                                                                                                                                  g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Óλ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     δy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Ω
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Ω
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ŏ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           οy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       g
                                      q
                                                                   ò
                                                                                        g
                                                                                                                    õ
                                                                                                                                                   a
                                                                                                                                                                                ò
                                                                                                                                                                                                        g
                                                                                                                                                                                                                                     δy
                                                                                                                                                                                                                                                                                            δ
                                                                                                                                                                                                                                                                                                                                                    ŏ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 /product="UDP-3-0-acyl-N-acetylglucosamine deacetylase"
/protein_id="AAG07794.1"
/protein_id="AAG07794.1"
/d_xref="cf1:9956638"
/translation="MIKORTHNITATGVGLHSGEKVYLTIKPAPVDTGIVFCRTDL
DPVVEISPARAENVGETTMSTTLVKGDVKVDTVEHLLSAMAGLGIDNAYVELSASEVPI
MDGSAGPFVFLIQSAGLØDGRAKKTRIKREVSVEEGDKRAVFVPEDGFKVSFEIDF
DHPVFRGRTQQASVDFSSTSVKEVSRARTFGFMRDIEYLRSQNLALGGSVBNITVD
ENRVLNEDGLRYEBERYKHKILDAIGDLYLLGNSLIGEFRGFKSGHALNNQLLRTLLA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     /translation="WeelVoniagotavikvigyggggggnavnhmaknnvegyefican
TDAQALKNIAARTVLQLGPGVTKGLGAGANPEVGRQAALEDRERISEVLEGADMVFIT
TGMGGGTGTGAAPIIAEVAKEMGILTVAVVTRPFFPFEGRKRMQIADEGIRALAESVDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ATGAGCCTGATCGCCTCCGACCACTTCCGCATCGTTGTCGGCCTCGGCAAGAGCGGCATG 16206
                                                                                            /translation="MLFAEAQRICRLQQLLESQLQPAARPYCHVASWRGGCLLLIVTD GHWATRLRYQQRRLQRQLQAFEEFANLAKILFKVQPTTSTQRAARRSLTLSAVAAENL RESAEIVGNPRLREALERLASRAEKSRQE"

COMPLement (5865. .6776)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               LITIPNEKLLTILGKDASLLAAFAKADDVLAGAVRGISDIIKRPGMINVDFADVKTVM
SEGNAMMGTGGASGPNRARBATEATEAT INPLLEDVNLGGARCILVNITAGPDLSLGEY
SDVGHI IEGPASHATVKVGTVIDADMRDELHVTVVATGLGARLEKVKVVDNIVQGS
AQQAAAPAQREQQSVNYRDLDRFTVMRNQSHGSAATAAKLNPQDDLDYLDIPAFLRRQ
                                                                                                                                                                                                                       /locus_tag="PA4406"
/note="Protein name confidence: Class 1 (function
experimentally demonstrated in P. aeruginosa); Alt protein
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        (high similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          MetSerLeulleAlaSerAspHisPheArgIleValValGlyLeuGlyLySerGlyMet
  9
reported sequences)"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ~
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       /locus_tag="PA4407"
/note="Protein name confidence: Class
to functionally studied protein)"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          /product-"cell division protein Ftsz"
/protein_id-"AAG07795.1"
/db_xref-"GI:9950639"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Length:
Matches:
Conservative:
Mismatches:
Indels:
                                                  /product="hypothetical protein"
/protein_id="AAG07793.1"
/db_xref="GI:9950637"
οŧ
             to any previously
                                                                                                                                                                  /locus_tag="PA4406"
/note="synonyms: envA, acomplement(5865. .6776)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                /locus_tag="PA4407"
complement(6889..8073)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          AD" complement(8124. .9377)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Gaps:
                                                                                                                                                                                                                                                                                                                                                                                                                                    complement(6889. .8073)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             (1-24000)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     /gene="ftsA"
/locus_tag="PA4408"
reported
                                                                                                                                                                                                                                                                   name: EnvA protein'
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  /codon_start=1
/transl_table=11
                            /codon_start=1
/transl_table=11
                                                                                                                                                                                                                                                                                              /transl_table=11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             US-09-701-229-2 (1-448) x AE004856
                                                                                                                                                                                                                                                                                                                                                                                                                                                     /gene="fts2"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             /gene-"fts2"
                                                                                                                                                    /gene="lpxc"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       448.00
100.00%
100.00%
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Percent Similarity:
Best Local Similarity:
Query Match:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Alignment Scores:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     16265
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Pred. No.:
                                                                                                                                         gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           gene
                                                                                                                                                                                              CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                              CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Score:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    g
```

15726

160

140

15666

200

15606

220

15486

260

280

15546

240

15366

300

15246

15306

320

340

15126

380

15186

360

a

δ 셤

셤 ð

```
SGPRFDGHDYLAEVAAKGAVAALVEREVADAPLPQLLVRÖTRAALGRIGALNÜRKFTG
FAAAWTGSGSKTAVKENLASILKTQAGADESVLATRGNLUNDLGYPLTLLQLAGOHRS
AVIELGASRIGEIAYTVELTRPHVA IITNAGTAHVGEFGGPEK IVERKGEILEGLAAD
GTAVLNLDDRAFDTWKARASGRPLLTFSLDRPQADFRAADLQRDARGCWGFRLQGVAG
GAOVOLNLCKSHNVANALAAAAAHLALGVPLOGIVAGLAALQPVKGRRVAQLTASGLR
VIDDSYNANRASMLAA IDILISGSGRTVLVLGDWGELGSWARQARGVGAGKVAL
LIANGGPLMAHAVQAFGATGRHFADQASLIGALATILIKGSRSAAMBKVVAAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             /protein_id="Aag22121.1"
/db_xref="GI:10719754"
/db_xref="GI:10719754"
/translation="MLLLAEYLOOFYKGFGVFQYLTLRGILSVLTALSLSLWLGPWM
IRTLQIOGAOVRNDGSHLSKKGTPTWGGALILTAIAISTLLWADLSNRYWWVL
VYTLLFGAIGWYDDYRRYIERNSKGLPSRWKFWQSVFGIGAAVFLYMTAETPTETTL
IVPMLKSVEIQLGIFFVVLTYFVIVGSSNAVNLTDGLDGLAIMPTVWVAGALGIFCYL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                SGNVKFAEYLLIPNVPGAGELIVFCAALVGAGLGFLWFNTYPAQVFMGDVGALALGAA
LGTIAVIVRQEIVLFIMGGVFVMETLSVMIQVASFKLTGRRVFRMAPIHHHFELKGWP
DPRVIVRFWIITVILVLIGLATLKLR"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ALTRPLIADTVPCWSFGLNKPDFKAFGLIEEDGGWULAFGFGKLLPVGELKIRCAHNY
SNALAALALGHAVGLPFDAMLGALKAFSGLAHRCGWYRERGGVSYYDDSKATNVGAAL
AATEGLGADTDGKLVLLAGGDGKGADFHDLREPVARFCRAVVLLGRDAGLAGA
VPL/RYVATLDEAVRQAAEDAV
1781 c 1759 g 923 t
1781 c 1759 g
                                                                                                                                                                                                                                                       /protein_1d="AAG45236.1"
/db_xref="G1:12007717"
/translation="MLEPLRLSQLTVALDARLIGEDAVFSAVSTDSRAIGPGQLFIAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               /translation="MSLIASHFRIVVGLGKSGMSLVRYLARRGLPFAVVDTRENPPE
LATLRAQYPQVEARCGELDAEFLCSARELYVSPGLSLRTPALVQAAAKGVRISGDIDL
FAREAKAPIVAITGSNAKSTVTTLVGEMAVAADKRVAVGGNLGTPALDLLADDIELYV
                                                                                                                                                          UDP-N-acetylmuramyl-L-alanine-D-glutamate-m-Dap precursor"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               LELSSFQLETCDRLNAEVATVLNVSEDHMDRYDGMADYHLAKHRIFRGARQVVVNRAD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   /note-"phospho-N-acetylmuramoyl-pentapeptide translocase"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   /note="UDD-N-acetylmuramyl-L-alanine:D-glutamate ligase; recombinant enzyme catalyzed the ATP-dependent addition of D-glutamate to the precursor sugar peptide"
                                                                                                            /note="recombinant enzyme catalyzed the ATP-dependent addition of D-alanine-D-alanine to the
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              MetSerLeulleAlaSerAspHisPheArgIleValValGlyLeuGlyLysSerGlyMet
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Length:
Matches:
Conservative:
Mismatches:
Indels:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   /protein_id="AAG45237.1"
/db_xref="G1:12007718"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Gaps:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                US-09-701-229-2 (1-448) x AY008276 (1-5280)
                                                                                                                                                                                                              /transl_table=11
/product="MurF"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          /codon_start=1
/transl_table=11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       /transl_table=11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           /product-"MraY"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               /product="MurD"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                /codon_start=1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      3929. .5275
/gene="murD"
3929. .5275
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      /gene="mray"
2833. 3915
/gene="mray"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     3.39e-291
290.00
99.11%
99.11%
64.73%
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            /gene="murD"
                                                           1457. .2833
/gene="murF"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 .3915
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            CGSSEESH
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Best Local Similarity:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        817
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Percent Similarity:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Alignment Scores:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Pred. No.:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      BASE COUNT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      gene
               gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           gene
                                                           CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ORIGIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           E 3 (bases 1 to 5280)
S El-Sherbeini, M. and Azzolina, B.
El-Sherbeini, M. and Azzolina, B.
El-Sherbeini, M. and Azzolina, B.
Lubarted (20-SEP-2000) Biochemistry, Merck Research Laboratories, 126 E. Lincoln Avenue, Rahway, NJ 07065, USA
E 4 (bases 1 to 5280)
L Submitted (02-JAN-2001) Biochemistry, Merck Research Laboratories, 126 E. Lincoln Avenue, Rahway, NJ 07065, USA
Sequence update by submitter
On Jan 2, 2001 this sequence version replaced gi:10719753.
Location/Qualifiers
rce
5280 bp DNA linear BCT 19-JUL-2001 aeruginosa MurE (murE), MurF (murF), MraY (mraY), and genes, complete cds.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 /translation="MPMSLSQLFPQAERDLLIRELTLDSHGVRPVDLFLTVPGGHQDG
ATHIADALTRGATANAXTEAEGAGELPEPEDAPLIAVKGLAAQGASAVGRFYGEPSGRLD
LIGYTGTNGKTSVSQLVAQALDLGBRCGTVGTLGTGTGTGTAEGAHTTPDPLAVQAT
LATLKQAGARAVAMEVSSHGLDGGRVAALGFDIAVFTNISRDHLDYHGSRBHZAAAKA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   KLFAWPDLRCRVINLDDDFGRRLAGEEQDSELITYSLTDSSAFLYCREASPTARR
RSS TAKNGGLLRSPLLGRFNENLLAWGALLGLGFGFFGLIRTLPQCGSPVGRVGRL
GGGGRFLVVVDYAHFPDALEKVLEALRPHAARLLCLFGCGGDRDAGRRPLMAIAER
LADEVLVTDDNPRTEASAAIIADIRKGFAAADKVTFLPSRGEAIAHLIASAAVDDVVL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            1 (bases 1 to 5280)
Azzolina, B.A., Yuan, X., Anderson, M.S. and El-Sherbeini, M.
The cell wall and cell division gene cluster in the Mra operon of Pseudomonas aeruginosa: cloning, production, and purification of
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             /gene="murE"
/note="UDP-N-acetylmuramcyl-L-alanyl-D-glutamate:meso-2,
6-diaminopimelate ligase"
/codon_start=1
/transl_table=11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Pseudomonas aeruginosa
Bacteria; Proteobacteria; Gammaproteobacteria; Pseudomonadales;

    (bases 1 to 5280)
    El-Sherbeini, M. and Azzolina, B.
    Pseudomonas aeruginosa mraY, murD, murE, and murF genes

                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   LAGKGHEDYQEIDGVRHPFSDIEQAERALAAWEVPHA"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             /organism="Pseudomonas aeruginosa"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Protein Expr. Purif. 21 (3), 393-400 (2001)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                /protein_id="AAG45235.1"
/db_xref="G1:12007716"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      /mol_type="genomic DNA"
/db_xref="taxon:287"
                                                                                                                                                                                                                                                     14945 GCCAAAGCCGTAGAGGAGCTAGCG 14922
                                                                                                                                                                                                      441 AlaLysAlaValGluGluLeuAla 448
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Pseudomonadaceae; Pseudomonas.
                                                                                                                                                                                                                                                                                                                                               AX008276 S:
Pseudomonas aeruginosa Mu:
MurD (murD) genes, comple
AX008276.2 GI:12007715
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              /product-"MurE"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Pseudomonas aeruginosa
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     1. .1464
/gene="murE"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           .1464
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   active enzymes
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Unpublished
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       21178826
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              11281713
                                                                                                                                                                                                                                                                                                                                                                                                                                                                        KEYWORDS
SOURCE
ORGANISM
                                                                                                                                                                                                                                                                                                                                                                         DEFINITION
                                                                                                                                                                                                                                                                                                                                                                                                                          ACCESSION
VERSION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 REFERENCE
AUTHORS
TITLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        AUTHORS
TITLE
JOURNAL
REFERENCE
AUTHORS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 TITLE
JOURNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           AUTHORS
TITLE
JOURNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         PUBMED
REFERENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           JOURNAL
MEDLINE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          gene
                                                                                                                                                                                                                                                                                                      RESULT 2
AY008276
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         REFERENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       COMMENT
FEATURES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                REMARK
```

gene

CDS

```
PLIGGGDASTNNDATHALVASIPAEQLOQPTNDQTLAGWTSLAFAVKSAGTLEOQQAA
IEAWYKQHPDHPAAQQLEALTKIKEELASQPLTKIALLLPGGEDLAGVARALRDGFWA
AHFQAQQSGQPAQVPEDSSTRIGSLDDFTRQAQAAGVQLVIGPLEKPLVKQLAAKPG
LDITTLALNYADAAQAQARPEDSRFGGLAAEDERREVARRARADGMYRANALVPSGEWGD
RYLAAFRQDWEGNGGTLLAARRIAQOYAALAQDIADLFQLRQSEGRAKSLOSTVGGSIA
AQPSRRQDIPDFILLANTAQQAQQIKPTLNFQYRAGDVVYATSNLYSASGDINQYNDMN
GIRFCETPWILLDTSNSLRQQVVQQWPQAAGSGLGRLYAMGVDAYSLAFRIGGLKALDDN
RYLGLSGSLSINANORVERQLPWAEFSGGQVKRLPDTVR"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           complement(5744...6164)
/locus_tag="PP1327"
/note="This region contains a gene with one or more
premature stops or frameshifts, and is not the result of a
sequencing artifact; conserved hypochetical protein,
degenerate; similar to GB:X16944, and SP:P15488;
identified by sequence similarity; putative"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           IAAEDTRHSIRLLQHFGIDTPLIAACHEHNERDEGGRFLSKLLAGENVALVSDAGTPLI
SDPGYHLVRQARAAGVSVVPYPGAGALIAALSAAGLPSDRFIFEGFLPAKQAGRRARL
SQNREPRTLIFYEAPHRILECLEDMEAVFGGDRPALLARELTKTFFTLKGLPLAELR
AFVAGDSNQORGECVVLVGGGNSAPEGEQAISAEAQRILLAELLAELPLKRAAALAAEIT
GVRKNLLYOLALEKQKAE"
                                                                                                                                                                                                                                                                                                                                                                                                                                                          /codon_start=1
/transl_table=11
/product="tetrapyrrole methylase family protein"
/protein_id="AaN66950.1"
/db_xref="GI:A982784"
/translation="MCAVTDVAGASKSTVGTLYVVATPIGNLDDMSARALKVLADVAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      /translation="MMGITAVFRGANAVSLDAKGRLAMPSRYRDELDSRCNGQLIVTI
DAVDPCLCVYPLDEWEGIEAKLRALPSLREENRRLQRLIGNAVDLELDGSGRPLVPP
RLREYAKLDKKAMLVGQLNKFQLWDEDAWNAVSAADLAAIQQPGAMPDELRDLIL"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          /translation-"MTIDSGFNHITVLLDEAVEALALRADGCYLDGTFGRGGHSRLIL
SKLGFPGRILGFDRDPQAIATGQALAAEDGRFYIVQRSFAELGAEVAARGLHGKYSGV
LLDLGVSSPQLDDPERGFSFLNDGPLDRAWNPDQGVSAAEFIATAPVEEIARVEKEYG
EERFAGRWARAVVERREKQPFTRTADLAEVLKYANPAMEKGKNPATRAPGGLRIHVNN
   amsrnopkaaltalahpslorlaelpadloartysvhaaaleadgoalaaaoorilla
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ELGDLEAGLEAALDALEVGGRLAVISFHSLEDRIVKLEMRKLVKGEADNLPRNLPVQH
KVFEPKIKLIGKAQFASEAELKANPRSRSAVMRVAEKLR"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     /locus_tag="PP1328"
6455..6928
/locus_tag="PP1328"
/note="identified by match to PFAM protein family HWM
PF02381"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Jocus_tag="PP1330"
Jlocus_tag="PP1330"
/locus_tag="similar to GB:M11186, GB:M62611, SP:P01178,
PID:189411, PID:386991, and PID:825699; identified by sequence similarity; putative"
                                                                                                                                                                                                                                                                                                                                                                    /locus_tag="PP1326"
/note="identified by match to PFAM protein family HMM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         /locus_tag="ppl329"
/note="similar to GP:9950652; identified by sequence similarity; putative"
/codon_start=1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      /product-"conserved hypothetical protein TIGR00242"
/protein_id="AAN66951.1"
/db_xref="GI:24982786"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             /product="conserved hypothetical protein TIGR00006"
/protein_id="AaN66952.1"
/db_xref="G1:24982787"
                                                                                                                                                                                                                                                                                                       /locus_tag="PP1326"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   6925. .7872
/locus_tag="PP1329"
6925. .7872
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 /locus_tag="PP1330"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         /codon_start=1/transl_table=11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       /transl_table=11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 7869. .8162
/gene="ftst"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       7869. .8162
/gene="ftsL"
                                                                                                                                                                                                                                                                                                                                                                                                                                 PF00590"
                                                                                                                                                                                                                                                                                   gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   CDS
                                                                                                                                                                                                                                                                                                                                             CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 CDS
                                                                                                                                                                                                                                                                                                                                                                /product="stringent starvation protein B"
/protein_id="aAN66945.1"
/protein_id="aAN66945.1"
/d_xxef="col:24982778"
/translation="MKCASFREPEMNSSRPYIUVRALYEWIVDNDCTPHMLVNAEFPKV
QVPDGFASDGGIVLNISPSAAVRSLHMDNDAVSFBGRFSGVAHSLFVPYGAILGIYARE
NGGGWYFELEPSSMDGDELEDDDVQPDDDGPPDDGGQPPRPTGRPSLKVVK"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    /product="lipoprotein, putative"
/protein_id="aAN66946.1"
/protein_id="aAN66946.1"
/brotein_id="aAN66946.1"
/da_xref="GT:24992779"
/tanslation="MTPMRLGLMALTLCLSVTGCSSVLTSTRNSPIEDDRGTRTIGSK
/translation="MTPMRLGLMALTLCLSVTGCSSVLTSTRNSPIEDDRGTRTIGSK
IDDSLIETKAAVNISKANPNLDRGSHLVVSSYNGIVLLAGOTPRADIKSLAEGTASQV
QRVKKVHNELQVMQPSSILARNNDAMLTTKIKTQMLTDSAVPSSRIKVITENGIVYLL
GLVTRQEANATAVVQGVSGYQKIVKLFEYID"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      /translation-"MOSRIRRLFEASIETKOOAMDILAPHIEOASLVMVNALLNEGKM
LACGNGGSAGDAQHFSSELLNRFERRRPSLPAIALTTDSSTLTSIANDYSYNEVFSKO
IRALGQPGDVLLAISTSGNSANVIQAIQAAHDREMIVVALTGRDGGGMASLLLPEDVE
IRVPSTVTARIQEVHLLAIHGLCDLIDSQLFGSEE"
QRDWCALADTVLDPRSSEAARTEARKALRESLTGVSPLFSEFACFMSDEQSLVDCCLL
PILWRLPVLGIELPRQAKPLLDYMEROFAREPFQASLSSVEREMRKL"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     /translation="MIACLRLLTALCLAALLAACASSPSSSLGELPRTPDASIEQLLE
KAASSKSAEDAALLRLSAADLAYKQKDFPRAARILEQVPLDTLKPAQQVFASTLAAEL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             /translation="MMAAASPTRAGQAAETQALEYLQGQGLQLLARNWRCKGGELDLV
MLDADTVVFVEVEVRYRLHAGFGGALDSIDGRRQKRLVLAAATLFLQKEAHWGNYPCRFDV
                                                                                                                                                                                                                                                /note="similar to GB:S50157, GB:X60221, SP:P24539, and PID:509291; identified by sequence similarity; putative"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               complement(1791. .2378)
/gene="gmhA"
/locus_tag="PP1323"
/note="identified by match to PFAM protein family HMM
PF01380"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      complement(2471. .2845)
/locus_tag="PP1324"
/note="identified by match to TIGR protein family HMM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             /product-"conserved hypothetical protein TIGR00252"
/protein_id-"AAN66948.1"
/db_xref-"GI:24982782"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  /product="phosphoheptose isomerase"
/protein_id="AAN66947.1"
/db_xref="GI:24982780"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              /product="lipoprotein, putative"
/protein_id="AAN66949.1"
/db_xref="GI:24982783"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           complement(1216...1794)
/locus_tag="pp1322"
/codon_start=1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       complement(1216. .1794)
/locus_tag="PP1322"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                complement(2471. .2845)
/locus_tag="PP1324"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    complement(2842. .4659)
/locus_tag="PP1325"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               complement(1791. .2378)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       complement(2842. .4659)
/locus_tag="PP1325"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          VALQGSHHAGRPLQWLKNAFEC
                                                                                                                                                                                                                /locus_tag="PP1321"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               /gene="gmhA"
/locus_tag="PP1323"
                                                                                                                         locus_tag="PP1321"
                                                                                                                                                                                                                                                                                                                                          /transl_table=11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 /transl_table=11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      /transl_table=11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       /transl_table=11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 transl_table=11
                                                                                                                                                                                                                                                                                                       /codon_start=1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            /codon_start=1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          /codon_start=1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    /codon_start=1
                                                                                             /gene="sspB"
                                                                                                                                                                                   'gene="sspB"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       rIGR00252
```

gene

CDS

gene

CDS

gene

gene

CDS

ð

셤 à

```
/TEABLAL 1018-MARVITARHHSHCSAIHRIAMTRPEAAMTRTQHLRACHLCEAICG
LAIETVTEPGAAPKITSIKGDPLDTFSRGHICPKAVALQDIQNDPDRLRQPWLRTGD
UADIEWQAFEDLVAERLIYAIQQHGQNAVAYYQGNPSYHYGLAMTSAYRYELGLLKTRN
RFSATSVDQLPHLIYESIMYCHMILPIDIDHTDFMLILGGNPLASNGSIWYVPDVB
KRLKAIQQRGGKLVVVDPRRSETAAIADQHVFVRPGGDAALLFGLLNTLFEEGLITRES
HIPVDGLDHYRHSIAGFSAEAMSPRCGIAAVQIRQLARDFAGADTALCYGRWGVSTQA
FGTLCHWLAQLINLYTGNDRVGGTLCTEPAVDLVSSTSGGHFNVWQSRVSGLPEYGG
ELDVSALAEEBMLVPGGGOGVRALVTVAGNPVLSTPNGRQLDQALEGLEFMLSIDIXINE
TTRHADLILPSTSALENDHYDTTFNTLAVRNVTRFNRAIFDKPEGGLHDWEIFVGLAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        /db_xref="G1:28654556"
/translation="MDSKEHQLTELLGLTARTLTHLTASMTSMSFELLRSEDEVTRNA
RRMIDPMATISSGLDEHWRLIGDLTGIHMAQEQVETVTEIQLQRKIVTPIGG"
4100. :5020
/gene="argf"
                                                                                                                                                                                                                   /translation="MDIIETIKEQIASNTILLYMKGAPNAPQCGFSAKASQALMACGE
KFAYVDILQNPEIRANLPKYANWPTFPQLMVAGELVGGSDIITEMMADGSLQTLVKEA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             SFAAKAQRELKPTVPPAQMIDRVLRAGRYGAASPHNLSLETLASHPHGMDLGALKPNL
TYDLKTVARGRYQAAPEVTMADLVRFAADAGPREGRAGOLLIGGRRHYRSBNSWHNY
HRLYKGKPRHQLLMHPDDLSHRGLSDGQQVRYSSRVGVTBVBYLGSLDMPGVYSLPH
GWGHSRSGVKMEIARNQPGYSANDLTDERQLDELSGNAALNGVPVQVASC"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 IRTYAHDNIJEFAANSRVPVINGLSDDLHPCQLLADMOTFLEHRGSIKGKTVAWIGDG
NNMCNSYIEAAIQFDFQLRVACPAGYEPNPEFLALAGERVTVVRDPKAAVAGAHLVST
DVWTSMGQEEETARRKALFAPFQVTRALLDLADKDVLFWHCLPAHRGEEISVDLLDDA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             LGMIFEKSSTRTRLSFEAGMIQLGGQAIFLSHRDTQLGRGEPIADSAKVISRMLDAVM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    /translation="MNARHFLSMMDYTPDELLGLIRRGVELKDLRNRGVLFEPLKNRV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              5026. .6087
/locus_tag="PSPTO4165"
/note="similar to GB:248042, SP:Q14444, and PID:662994;
identified by sequence similarity; putative"
complement(689. .1015)
/locus_tag="PSPT04161"
/note="identified by match to TIGR protein family HMM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  /locus_tag="PSPT04164"
/note="identified by match to PFAM protein family HMM
                                                                                                                                                                                                                                                                                                                                    complement(1104. .3302)
/locus_tag="PSPT04162"
/note="similar to GP:5441785; identified by sequence similarity; putative"
/codon_start=1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                              /product="oxidoreductase, molybdopterin-binding"
/protein_id="AAO57618.1"
/db_xref="GI:28854555"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           /product-"conserved hypothetical protein"
/protein_id="AAO57619.1"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  /transl_table=11
/product="ornithine carbamoyltransferase"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       complement(3357, .3650)
/locus_tag="PSPT04163"
/note="identified by Glimmer2; putative"
                                                                                                                                          /product="glutaredoxin-related protein"
/protein_id="AAO57617.1"
/db_xref="G1:28854554"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            RSVAWDQAENRLHAQKALLEFLVAPCFQPA"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    /protein_id="AAO57620.1"
/db_xref="G1:28854557"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            complement(3357. 3650)
/locus_tag="PSPTO4163"
complement(3357. 3650)
                                                                                                                                                                                                                                                                                    complement(1104. .3302)
/locus_tag="PSPTO4162"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            /iocus_tag="PSPTO4164"
4100. :5020
/gene="argF"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          locus_tag="PSPTO4165"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                /codon_start=1
/trans1_table=11
                                                                                                                        /transl_table=11
                                                                                                                                                                                                                                                                                                                                                                                                                                                               /transl_table=11
                                                                                               /codon_start=1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                codon_start=1
                                                                      TIGR00365
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       PF02729"
                                                                                                                                                                                                                                                                     SAAKAE"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     gene
                                                                                                                                                                                                                                                                                              gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      gene
                                                                                                                                                                                                                                                                                                                                         CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     CDS
  CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                Pseudomonas syringae pv. tomato str. DC3000 section 16 of 21 of the complete genome.
AE016871 AE016853
                                                                                                                                                                                                                                                           /translation="wkgDITVIQHLNKILGNELVAINOYFLHARMYEDWGLKKLGGHE
YKESIHAMKYADKLIKRTLFLEGLPNLQDLGKILIGEHTKEMLECDLKIEQKGLADLK
AAIAHFETVGDFGSRELLEDILEPKEEQIDWLETQLGLIVKVGIENYLQSQMGD"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        /locus_tag="PSPTO4160"
/note="similar to SP:P22759, and SP:P22759; identified by
sequence similarity; putative"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    2 (pases 1 to 311600)
Buell, R., Joardar, V., Khouri, H., Fedorova, N., Tran, B., Russell, D.,
Berry, K., Utterback, T., Van Aken, S., Feldblyum, T., Gwinn, M.,
Dodson, R., Denkin, A., Kolonay, J., Madupu, R.,
Daugherty, S., Brinkac, L., Beanan, M., Haft, D., Selengut, J.,
Nelson, W., Davidsen, T., White, O., Fraser, C. and Collmer, A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Buell, R., Joardar, V., Khouri, H., Fedorova, N., Tran, B., Russell, D., Berry, K., Utterback, T., Van Aken, S., Feldblyum, T., Gwinn, M., Dodson, R., DeBoy, R., Durkin, A., Kolonay, J., Madupu, R., Daugherty, S., Brinkac, L., Beanan, M., Haft, D., Selengut, J., Nelson, W., Davidsen, T., White, O., Fraser, C. and Collmer, A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  /______sumer resendomonas syringae pv. tomato str. DC3000"/mol_type="genomic DNA"/strain="DC3000"/Ab week."
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Genomic Research, 9712
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Bacteria; Proteobacteria; Gammaproteobacteria; Pseudomonadales;
                                                                                                                                                                                                                                                                                                                                                          301995
35
0
0
0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Submitted (03-MAR-2003) The Institute for Ge Medical Center Dr. Rockville, MD 20850, USA Location/Qualifiers
1. .11600
/organism="Pseudomonas syringae pv.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Pseudomonas syringae pv. tomato str. DC3000
Pseudomonas syringae pv. tomato str. DC3000
                                                                                          Conservative:
Mismatches:
Indels:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            /product="bacterioferritin"
/protein_id="AAO57616.1"
/db_xref="GI:28854553"
                                             Length:
Matches:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     /db_xref="taxon:223283"
/note="pathovar: tomato"
                                                                                                                                                                                                              (1-301995)
                                                                                                                                                                   Gaps:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             /locus_tag="PSPTO4160"
131. .601
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                complement(689. .1015)
/locus_tag="PSPTO4161"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Pseudomonadaceae; Pseudomonas.
1 (bases 1 to 311600)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             /transl_table=11
                                                                                                                                                                                                              US-09-701-229-2 (1-448) x AE016779
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      /codon_start=1
                                        5.36e-24
35.00
100.00%
100.00%
7.81%
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    131. .601
/gene="bfr"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 /gene="bfr"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Unpublished
                                                                             Percent Similarity:
Best Local Similarity:
Query Match:
                    Alignment Scores:
Pred. No.:
                                                                                                                                                                                                                                                                                                                                                                                                                                                          RESULT 4
AE016871/c
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             source
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                DEFINITION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ORGANISM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           TITLE
JOURNAL
REFERENCE
AUTHORS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ACCESSION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       VERSION
KEYWORDS
SOURCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      REFERENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 JOURNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 PEATURES
                                                                      Score:
```

```
/Jocus_tag-"pspr04167"
//locus_tag-"pspr04167"
//locus_tag-"pspr04167"
//locus_tag-"pspr04167"
//locus_taliar_to, putative"
//codon_start=1
//transl_table=11
//transl_table=11
//product-"glycarol uptake facilitator protein"
/product-"glycarol uptake facilitator protein"
/protein_id="AAO57623.1"
/db_xref="GI:28854560"
//translation="WTIALKQPTLTGGCVAEFLGTALMIFFGTGCVAALKVAGATFGLWEICINGMAVSMITSLFFDFEHHHIIRGSGSLELEASTSTRAPAISVGQAFLVEVVITTILMGVIMALGDDNNGLPRGALHNIRGSGSLELLASTSTRAPAISVGQAFLVEVVITTILMGVIMALGDDNNGLPRGALAPLLIGLLVAVIGSAMGPLTGFRAMNPARDFGPKLMFFFAGMEIAFLGFGGLAAGSCRAMTFFAGMENDFTLAGGLCAAGGRALIARHLPSTVTVENEKEAPV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          /codo_start=1
/transl_table=11
/product='glycerol kinase"
/db_xref='Gl='aAo57624.1"
/translation='MTDTQNKNVITALDGGTTSSRAIIFDRDANVVSTAQSEFVQHYP
QAGWVEHDPMEIFATOTACMKNAIAQADLHHDQIAAAGITNQRETTYTWBRDTGRPIY
NAIVWGCRRETEIGOQLKROGLEEYIKDTTGLYLDPFFESGSKVWILDHVEGSRERAR
KGELMFGTIDTWLINKFTGGKRVHVTDYTNASFTMLENIHTLEWDQRMLDVLDDFREIL
PEVKSSSEVYGHSKSGIPIAGIAGDQQAALEGGWVCNEGQARMYYGTGCFLLMNTGK
AVKSAHGMLTTIGGCPRGEVARALEGAVFNGGSTVQMLRDELKINDALDTEYFAGKV
KDSNGVYLVPAFTGLGAPYMDPYARGALFGLTRGVKVDHIIRAALESIAYQTROVLDA
MQQDSGERLKSLRVDGGANANNFLMQFQADILGTHVBRPQMRETTALGAAFLAGGAIG
FWSSLDELNKKAVIERVPEBARCEEAHREKLYAGWQRAVARTRDWEPHENEE"
                                                                                                                  /translation="Milnirniaggyondryvodinihlnagdiggligsggggktyt
irringepphagettlagdyisregwtlaperrrigmyfodyalfphilsvadniafg
trangfepphagettlagdyisregwtlapergggoryalaralabepgillidepf
Snldgetrrisherblikarsdikarstanddeberaysdhygyeregriegndty
NLYHEPQTPFVASFIGGGYFIRGDMEDESYHTELGYTRGNAYPGYRGSAVDYLLR
DDIYYAPDSDIKARYIGRTFKGASTLYRLQLPTGSQLEAIFPSHADHRQGEEVGIRVA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              /product="ypaK/ebsc protein"
/protein_id="AA057622.1"
/protein_id="AA057622.1"
/d_xref="G1:288545859"
/translation="YPPALDLEKRRAEHRIHSYEHDPKAASYGLEAAEKLGLDAARV
FWTLLASTEKGELLVAVVPVVGTLDLKALARAAGAKKTEMADPAAARSTGYTLGGIS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               /locus_tag="PSPT04168"
/note="ldentified by match to PFAM protein family HMM
                                                                                                                                                                                                                                                                                                            ADHLVIERAGGSVAAAG"

complement(6096. 6566)

/locus_tag="PSPT04166"

/locus_tag="PSPT04166"

/note="similar to SP:P21484; identified by sequence
/codon_start=1
/transl_table=111
/transl_table=111
/transl_table=11
/product_ARE(transporter, ATP-binding protein"
/db_xref="GI:28854558"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             7805. .9310
/gene="glpK"
/locus_tag="pSpT04168"
7805. .9310
/gene="glpK"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  locus_tag="PSPTO4167"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    /gene="glpR"
/locus_tag="PSPTO4169"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       9421. .10176
/gene="glpR"
/locus_tag="PSPTO4169"
9421. .10176
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              6918. .7775
/gene="glpF"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         6918. .7775
/gene="glpF"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     VRGKVQASS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  PF02782"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              CDS
```

CDS

```
PAT 24-JAN-2001
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            PAT 08-AUG-2001
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Escherichia coli
Escherichia coli
Bacteria; Proteobacteria; Ġammaproteobacteria; Enterobacteriales;
Enterobacteriaceae; Escherichia.
                                                                                                                                                                                                                                                                                                                       Moraxella catarrhalis
Moraxella catarrhalis
Bacteria; Proteobacteria; Gammaproteobacteria; Pseudomonadales;
/note="similar to SP:Q51391; identified by sequence similarity; putative"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             0011
                                                                                                                                                                                                                                                                                                                                                                                       Lagace, R.E., Patterson, C. and Berg, K.L.

Nucleotide sequences of moraxella catarrhalis genome
Patent: WO 0078968-A 35 28-DEC-2000;
Incyte Genomics, Inc. (US)
Location/Qualifiers
1. 96109

'Organism="Moraxella catarrhalis"
//mol_type="genomic DNA"
//db_xref="taxon:480"

T 28783 a 18910 c 20341 g 28075 t
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             H
                                                                                                                                                                                                                                                          linear
                                                 311600
20
0
0
0
0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Forsyth, R.A., Ohlsen, K.L. and Zyskind, J.W.
Genes identified as required for proliferation of Patent: WO 0148209-A 259 05-JUL-2001;
Elitra Pharmaceuticals, Inc. (US)
Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           linear
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     96109
19
0
0
0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Length:
Matches:
Conservative:
Mismatches:
                                                                              Conservative:
Mismatches:
                                                                                                                                                                                                                                                           DNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            DNA
                                                   Length:
Matches:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        AX189058 1317 bp C
Sequence 259 from Patent W00148209.
AX189058.1 GI:15142764
                                                                                                         Indels:
                                                                                                                                                                                                                                                       Sequence 35 from Patent WO0078968. AX067460
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Indels:
                                                                                                                                               US-09-701-229-2 (1-448) x AE016871 (1-311600)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Gaps:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               US-09-701-229-2 (1-448) x AX067460 (1-96109)
                                                                                                                                                                                                                                                                                                                                                                Moraxellaceae; Moraxella.
                                                                                                                                                                                                                                                                                                AX067460.1 GI:12545080
                                               2.33e-08
20.00
100.008
100.008
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 8.96e-08
19.00
100.008
100.008
                                                                         Percent Similarity:
Best Local Similarity:
Query Match:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Percent Similarity:
Best Local Similarity:
                                    Alignment Scores:
Pred. No.:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Alignment Scores:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Query Match:
                                                                                                                                                                                                                                                                                                                                                                                                                                                             source
                                                                                                                                                                                                                             RESULT 5
AX067460/c
                                                                                                                                                                                                                                                                   DEFINITION
                                                                                                                                                                                                                                                                                                                                     ORGANISM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               BASE COUNT
ORIGIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Pred. No.:
                                                                                                                                                                                                                                                                                ACCESSION
VERSION
                                                                                                                                                                                                                                                                                                                                                                           REFERENCE
AUTHORS
                                                                                                                                                                                                                                                                                                                                                                                                      TITLE
JOURNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     DEFINITION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ACCESSION
VERSION
KEYWORDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ORGANISM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                REFERENCE
AUTHORS
                                                                                                                                                                                                                                                                                                           KEYWORDS
SOURCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               RESULT 6
AX189058
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     JOURNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                               FEATURES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                FEATURES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          SOURCE
                                                                                                                                                                        ò
                                                                                                                                                                                                 a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           à
```

```
reading frame.
                                                                                                                                                                                                                                                                                                                                                       Best Local Similarity:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Flouret, B.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Ikeda, M.
                                                                                                                                                                                                                                351
                                                                                                                                                                                                                                                                                                                                     Percent Similarity:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     2179861
                                                                                                                                                                                                                                                                                 Alignment Scores:
                                                                                                                                                                                                                                                                                                                                                                    Query Match:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           source
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                DEFINITION
ACCESSION
VERSION
                                                                                                                                                                                                                            BASE COUNT
ORIGIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ORGANISM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       TITLE
JOURNAL
                                                                                                                                                                                                                                                                                                      ..
9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             REFERENCE
AUTHORS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 JOURNAL
MEDLINE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             REFERENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 AUTHORS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     PUBMED
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        REFERENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       AUTHORS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                JOURNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               RBS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     KEYWORDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       FEATURES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                TITLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ECMUROY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      COMMENT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                RESULT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         SOURCE
                                                                                                                                                                                                                                                                                                                      Score:
                                                                                                                                                                                                                                                                                                                                                                                                                                                   3
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             6
                                                                                                   /transl_table=11
/protein_id="CAC50739_1"
/protein_id="CAC50739_1"
/dxxef="G1:15142765"
/translation="MADYQGKNVVIIGLGIAGLSCVDFFLARGVTPRVMDTRWTPPGL
DKLPEAVERHTGSLNDEWLMAADLIVASPGIALAHPSLSAAADAGIEIVGDIELFCRE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Submitted (23-NOV-1989) Mengin-Lecreulx D., URA 1131 du CNRS, Biochimie Moleculaire et Cellulaire, Batiment 432, Universite Paris Sud, 91405 Orsay, France *map: map position=2 minutes; Data kindly reviewed (26-FEB-1990) by Mengin-Lecreulx.
                                                                                                                                                                                         AQAPIVAITGSNGKSTVTTLVGEMAKAAGVNVGVGGNIGLPALMLLDDECELYVLELS
SFQLETTSSLQAVAATILNVTEDHMDRYPFGLQQYRAAKLRIYENAKVCVVNADDALT
MPIRGADERCVSFGVNMGDYHLNHQQGETWLRVKGEKVLNVKEMKLSGQHNYTNALAA
                                                                                                                                                                                                                                           LALADAAGLPRASSLKALTTFTGLPHRFEVVLEHNGVRWINDSKATNVGSTEAALNGL
HVDGTLHLLLGGDGKSADFSPLARYLNGDNVRLYCFGRDGAQLAALRPEVAEQTETME
QAMRLLAPRVQPGDNVLLSPACASLDQFKNFEQRGNEFARLAKELG"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     BCT 12-SEP-1993
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          /note="ribosome binding site"
/note="ribosome binding site"
227. .1543
/note="UDP-N-acetylmuramoyl-L-alanine:D-gluta ligase (AA 1-438)"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Bacteria; Proteobacteria; Gammaproteobacteria; Enterobacteriales; Interobacteriales; Enterobacteriales; Interobacteriales; Interobacteriales; Interobacteriales; Interobacteriales; Mengin-Lecreulx, D. and van Heijenoort, J. Mucleotide sequence of the murD gene encoding the UDP-MurNAc-L-Ala-D-Glu synthetase of Escherichia coli Nucleic Acids Res. 18 (1), 183 (1990)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ECMURD 1629 bp DNA linear BCT 12-SEP-Escherichia coli murD gene for UDP-N-acetylmuramoyl-L-alanine:D-glutamate ligase (EC 6.3.2.9).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        murD gene; peptidoglycan synthesis;
PDD-N-acetylmuramcyl-L-alanine:D-glutamate ligase.
Escherichia coli
Escherichia coli
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Conservative:
Mismatches:
Indels:
                                                                  /note="unnamed protein product"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     coli"
                                                                                                                                                                                                                                                                                                300 t
                                                                                                                                                                                                                                                                                                                                                                    Length:
Matches:
                                                                                                                                                                                                                                                                                                                                                                                                                                                          Gaps:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               /organism="Escherichia //mol_type="genomic DNA" /strain="K12"
organism="Escherichia"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           US-09-701-229-2 (1-448) x AX189058 (1-1317)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     /db_xref="taxon:562"
212. .216
                /mol_type="genomic |
/db_xref="taxon:562"
                                                                                                                                                                                                                                                                                                  400 g
                                                                                      /codon_start=1
                                                                                                                                                                                                                                                                                                                                                                0.000314
14.00
100.00%
100.00%
3.12%
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      (bases 1 to 1629)
                                                                                                                                                                                                                                                                                              323 c
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Mengin-Lecreulx, D. Direct Submission
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     X17609
X17609.1 GI:42045
                                                                                                                                                                                                                                                                                                                                                                                                     Percent Similarity:
Best Local Similarity:
                                                                                                                                                                                                                                                                                                  294
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        2129548
                                                                                                                                                                                                                                                                                                                                                   Alignment Scores:
                                                                                                                                                                                                                                                                                                                                                                                                                                        Query Match:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    DEFINITION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ACCESSION
VERSION
KEYWORDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ORGANISM
                                                                                                                                                                                                                                                                                                BASE COUNT
                                                                                                                                                                                                                                                                                                                                                                      Pred. No.:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 AUTHORS
TITLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   JOURNAL
MEDLINE
PUBMED
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         AUTHORS
TITLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               REFERENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        REFERENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                RESULT 7
ECMURD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            JOURNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          CDS
                                                 CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           RBS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  FEATURES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               COMMENT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           SOURCE
                                                                                                                                                                                                                                                                                                               ORIGIN
                                                                                                                                                                                                                                                                                                                                                                                      Score:
```

g ð

```
/trānslation="MadYQGKNVVIIGLGLTGLSCVDFFLAAGVTPRVMDTRMTPPGL
AQAPIVATIGSGRGSTSTTTLVGBARAADLIVASPGIALAHPSLSAADAGIBTYGDIELECRE
AQAPIVAITGSGRGSTSTTTLVGBARAAGVVBVGGRIGLPALMLIDDECELYULELS
SFQLETTSSLQAVTATILNVTEDHMDRYPFGLQOYRAAKLRIYENAKVCVNNADDALY
WALRAADRACVSFGVNRGDYLHNHQOGETWLRYKGEKNLAVKEMKLSGGNYTNALAR
WALADAAGLPRASSLAALTTETGLPRFEVYLEHNGYRWINDSKATNVGSTBALNGT
HVDGTLHLLGGGDGKSADFSPLARYLNGDNVRLYCFGRDGQQLAALRPEVAEQTETME
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           BCT 12-SEP-1993
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Escherichia coli
Bacteria; Proteobacteria; Gammaproteobacteria; Enterobacteriales;
Enterobacteriaceae. Escherichia.
1 (bases 1 to 2608)
Ikeda, M., Wachi, M., Ishino, F. and Matsuhashi, M.
Nucleotide sequence involving murb and an open reading frame ORF-Y
spacing murf and ftsw in Escherichia coli
Nucleic Acids Res. 18 (4), 1058 (1990)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Submitted (15-MAR-1990) Flouret B., URA 1131 du Centre National de la Recherche Scientifique, C N R S, Biochimie Moleculaire et Cellulaire, Batiment 432 Universite Paris-Sud, 91405 Orsay, France Sequence independently determined by [3], but authors accept sequence [1] as definitive.

Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               X51584.1 GI:42058
membrane protein; murD gene;
UDP-N-acetylmuramoyl-L-alanyl-D-glutamate synthetase; unidentified
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Submitted (02-JAN-1989) Ikeda M., Institute of Applied Microbiology, The University of Tokyo, 1-1-1 Yayoi, Bunkyo-ku,
                                                                                                                                                                                                                                                                                     QAMRLLAPRVQPGDMVLLSPACASLDQFKNFEQRGNEFARLAKELG"
403 c 486 g 389 t
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           2608 bp DNA linear Escherichia coli murD gene and ORF-Y (EC 6.3.2.9).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    157 GluLeuTyrValLeuGluLeuSerSerPheGlnLeuGluThr 170
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            40000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               /note="pot. ribosome binding site"
111. ,1193
                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Conservative:
Mismatches:
Indels:
/transl_table=11
/protein_id="CAA35611.1"
/db_xref="G1:42046"
/db_xref="SWISS-PROT:P14900"
                                                                                                                                                                                                                                                                                                                                                                                                                 Length:
Matches:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     1. .2608
/organism="Escherichia c
/mol_type="genomic DNA"
/db_xref="taxon:562"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Gaps:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 US-09-701-229-2 (1-448) x ECMURD (1-1629)
                                                                                                                                                                                                                                                                                                              486 g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Tokyo 113, Japan
3 (bases 26 to 1354)
                                                                                                                                                                                                                                                                                                                                                                                                                                       14.00
100.00%
100.00%
3.12%
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              (bases 1 to 2608)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              /map="2min"
98. .102
                                                                                                                                                                                                                                                                                                                                                                                                                 0.00038
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Direct Submission
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Direct Submission
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Escherichia coli
```

```
2 (bases 1 to 11441)
Jin,O., Shen,Y., Wang,J.H., Liu,H., Yang,J., Yang,F., Zhang,X.B.,
Zhang,J.Y., Yang,G.W., Wu,H.T., Dong,J., Sun,L.L., Xue,Y.,
ZhaoA.L., Gao,Y.S., Zhu,J.P., Chen,S.X., Yao,Z.J., Wang,Y.,
Lu,W.C., Qiang,B.Q., Wen,Y.M. and Hou,Y.D.
Direct Submission
Submitted (08 MAY-2001) Microbial Genome Center of Chinese Ministry of Public Health, 100 Yingxin Jie, Xuanwu Qu, Beijing 100052, P.R.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     /transl_table=11
/product="4abC protein"
/product="4abC protein"
/product="4abC protein"
/db_xref="61:24050285"
/d
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     /protein_id="AaN41745.1"
//db_xref="G1:24050286"
//db_xref="G1:24050286"
//translation="MISRVTEALSKVKGSMGSHERHALPGVIGDDLLRFGKLPLCLFI
//translation="MISRVTEALSKVKGSMGSHERHALPGVIGDDLLRFGKLPLCLFI
//translation="MISRVTEALSTAG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Ç
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ដ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Jour lag-"SF0079"
/locus lag-"SF0079"
/note-"Residues 1 to 313 of 313 are 99 pct identical to
residues 34 to 346 of a 346 aa protein from Escherichia
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            /locus_tag="SF0078"
/note="Residues 13 to 164 of 164 are 99 pct identical tresidues 1 to 152 of a 152 as protein from Escherichia coli 0157:H7 EDL933 ref: NP_285777.1"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            /locus_tag="SF0080"
/note="Residues 1 to 121 of 121 are 100 pct identical tresidues 1 to 121 of a 121 aa protein from Escherichia coli 0157:H7 EDL933 ref: NP_285779.1"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      at
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  /product="cell division protein; ingrowth of wall septum"
                                                                                                                                                                                                                                                                                                                                                                                  /organism="Shigella flexneri 2a str. 301"
/mol_type="genomic DNA"
/strain="301"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      db_xref="taxon:198214"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 /gene="yabc"
/locus_tag="SF0079"
788. .1729
/gene="yabc"
                                                                                                                                                                                                                                                                                                                                      Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          /locus_tag="SF0078"
292. .786
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           /Jocus_tag="SF0080"
1726. .2091
/gene="ftsL"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  /codon_start=1
/transl_table=11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               coli pir: QOECFT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 /transl_table=11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    /serotype="2a"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               /codon_start=1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             /codon_start=1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 /gene-"yabB"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  /gene="yabB"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   /gene="ftsL"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         .1729
                                                                                                                                                                                                                                                                                                                                                                    1. .11441
                                                                                                                                                                                                                                                                                                                                                                        source
                                        REFERENCE
AUTHORS
                                                                                                                                                                                                      TITLE
JOURNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       gene
          PUBMED
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        gene
                                                                                                                                                                                                                                                                                                                                      FEATURES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   CDS
                                                                                                                                                                                                                          IAHLOKLSFGQVVRNDGPESHFSKRGTPTMGGIMILTATIVISYLLMAYPSDEMAYER VVVRGYGYGYGFGVDDYRKVVRKDTKGLIARWKYFWMSVIALGYAFALYLAGKDTPATOL VVJPFKDVWDGGLEYTLLAYFVVRCDTGGIARWSYFWMSVIALGYAFALYLAGKDTPATOL VVPFKDVWDGGLEYTLAYFVIYGTGNAVNLTDGLDGLAIMPTVFVAGGFALVAWA TGNMVRASYLHIPYLIRYGTATVYGGYALYGGGGEGFLWFNTYPAQVFMGDVGSTALGGA LGILAVLRQERLLYUMGGYFTLSYLLGGGGGGGGGGFLWFNTYPAQVFMGDVGSLAGGGEFRYTVRFWIISLMCWLIGGATLKVR"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         SFQLETTSSLOAVAATILNYTEDHMORYPFOLOGYONGUE TAMBLEDDELLY VELS
MPIRGADERCYSFGYNMGDYHLNHQQETWLRVKGEKVLNVKEMKLSGQHNYTNALAA
LALADAAGLPRASSLKALTTFTGLPHREDVLEHNGYRWINDSKATNNGSTEAALNGL
HVDGTLHLLLGGDGKSADFSPLARYLNGDNYRLYCFGRDGAQLAALRPEVAEQTETME
QAMRILLARVQPGDMVLLSPACASLDQFKNFEQRGNBFARLAKELG
                                                                                                                                                                                               translation="MLVWLAEHLVKYYSGFNVFSYLTFRAIVSLLTALFISLWMGPRW"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           /translation="MADYOGKNYVIIGLGLFGLSCVDFFLARGYTPRVMDTRWTPPGL
DKLPEAVERHTGSLNDEWLMAADLIVASPGIALAHPSLSAAADAGIEIVGDIELFCRE
AQAPIVAITGSNGKSTVTTLVGEMAKAAGVNVGVGGNIGLPALMLLDDECELYVLELS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             1 (bases 1 to 1144)
Jin,O., Yuan,Z.H., Xu,J.G., Wang,Y., Shen,Y., Lu,W.C., Wang,J.H.,
Liu,H., Yang,J., Yang,F., Qu,D., Zhang,X.B., Zhang,J.Y., Yang,G.W.,
Wu,H.T., Dong,J., Sun,L.L., Xue,Y., Zhao,A.L., Gao,Y.S., Zhu,J.P.,
Kan,B., Chen,S.X., Yao,Z.J., He,B.K., Chen,R.S., Ma,D.L.,
Glang,B.Q., Wen,Y.M., Hou,Y.D. and Yu,J.
Genome sequence of Shigella flexneri 2a: insights into
pathogenicity through comparison with genomes of Escherichia coli
K12 and O157
Nucleic Acids Res. 30 (20), 4432-4441 (2002)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              BCT 18-0CT-2002
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Shigella flexneri 2a str. 301
Shigella flexneri 2a str. 301
Bacteria; Proteobacteria; Gammaproteobacteria; Enterobacteriales;
Enterobacteriaceae, Shigella.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       AE015046 1141 bp DNA linear BCT 18-OCT-Shigella flexneri 2a str. 301 section 9 of 412 of the complete
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    //note="pot. ribosome binding site"
1196. .2512
/note="murD gene product (AA 1-438)"
/codon_start=1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Conservative:
Mismatches:
Indels:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   /protein_id="CAA35933.1"
/db_xref="GI:42060"
/db_xref="SWISS-PROT:P14900"
                                                                                                                                                              db_xref="SWISS-PROT:P15876"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Length:
Matches:
                                                                                              /protein_id="CAA35932.1"
/db_xref="GI:42059"
/note="ORF-Y (AA 1-360)"
                                                                                                                                                                                                                                                                                                                                                                                                                             .pot. -35 region"
.1048
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        /note="pot. -10 region"
1181. .1185
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Gaps:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        US-09-701-229-2 (1-448) x ECMUROY (1-2608)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          777 g
                                                                   /transl_table=11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        transl_table=11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  AE015046 AE005674
AE015046.1 GI:24050283
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                0.000579
14.00
100.00%
100.00%
3.12%
                                                                                                                                                                                                                                                                                                                                                                                                                                                            'note-"pot
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          631 c
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Percent Similarity:
Best Local Similarity:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ø
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       530
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           genome.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Alignment Scores:
                                                                                                                                                                                                                                                                                                                                                                                                                             promoter
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          promoter
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Query Match:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 LOCUS
DEFINITION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Pred. No.:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       BASE COUNT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ACCESSION
VERSION
KEYWORDS
SOURCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ORGANISM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    RESULT 9
AE015046
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       RBS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    REFERENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               AUTHORS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           JOURNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             TITLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ORIGIN
```

à

gene

CDS

```
/protein_id="An41749.1"
/db_xref="GI:24050290"
/translation="MIVWLABHLVKYYSGFNVFSYLTFRAIVSLLTALFISLWMGPRM
/translation="MIVWLABHLVKYYSGFNVFSYLTFRAIVSLLTALFISLWMGPRM
ITAHLOKLSFGQVVRNDGPESHFSKRGTPTMGGINILTALVISYLLWATPSNPYVWGVU
VVLVGYGGVGFVDDYRKVVRKDTRGLIARWKYFWMSVTALGVAFALLAAKDTPATGL
VVPFFRDVMPGCGLEYILLAXFVIVGTGNAVNLTDGLDGLAIMPTVFVAGGFALVAWA
TGNNMYRASYLHIPYLRHAGELVIVCTAIVGAGGELWFNTYPROVFMGDVGSLALGGA
LGIIAVLLRQBFLLVYNMGGVFVVFTLSVILQVGSFKLRGQRIFFRAAPIHHYELKGWP
PRRVIVRRWIISLMLVLIGLATLKVR"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       reactour entreacy, meanwhy. White, O., Clayton, R.A., Pleischmann, R.D., Adams, M.D., White, O., Clayton, R.A., Rirkness, E.F., Kerlavage, A.R., Bult, C.J., Tomb, J., Dougherty, B.A., McKness, E.F., Kerlavage, A.R., Bult, C.J., Titzhugh, W., Fields, C.A., Gocayne, J.D., Scott, J.D., Shirley, R., Liu, L.I., Glodek, A., Kelley, J.M., Weldman, J.F., Phillips, C.A., Spriggs, T., Hedblom, E., Cotton, M.D., Utterback, T., Hanna, M.C., Nguyen, D.T., Saudek, D.M., Brandon, R.C., Fine, L.D., Fritchman, J.L., Fuhrmann, J.L., Smith, H.O. and Venter, J.C., McDonald, L.A., Small, K.V., Fraser, C.M., Whole-genome random sequencing and assembly of Haemophilus
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       BCT 29-MAY-1998
                                                                                                                                                                 /locus_tag="SF0084"
/note="Residues 1 to 360 of 360 are 100 pct identical to
residues 1 to 360 of a 360 aa protein from Escherichia
coli K12 ref: NP_414629.1"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               /locus_tag="SF0085"
/locus_tag="Residues 1 to 438 of 438 are 99 pct identical to
residues 1 to 438 of a 438 aa protein from Escherichia
coli K12 ref: NP_414630.1"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Haemophilus influenzae Rd
Haemophilus influenzae Rd
Bacteria; Proteobacteria; Gammaproteobacteria; Pasteurellales;
Pasteurellaceae; Haemophilus.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       U32793 11498 bp DNA linear BCT 29-M7
Haemophilus influenzae Rd section 108 of 163 of the complete
                                                                                                                                                                                                                                                                                        /transl_table=11
/product="phospho-N-acetylmuramoyl-pentapeptide
transferase?"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 GluLeuTyrValLeuGluLeuSerSerPheGlnLeuGluThr 170
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     11441
14
0
0
0
0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Conservative:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Mismatches:
Indels:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Length:
Matches:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Gaps:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       US-09-701-229-2 (1-448) x AE015046 (1-11441)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 locus_tag="SF0085"
                                                                                   locus_tag="SF0084"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       /codon_start=1
/transl_table=11
                                                                                                                                                                                                                                                                                     /codon_start=1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      7781. .9097
/gene="murD"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          /gene="murD"
                       6696. .7778
/gene="mraY"
                                                                                                                                      'gene="mray"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Ŭ32793 L42023
U32793.1 GI:1574683
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  0.00217
14.00
100.00$
100.00$
3.12$
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                influenzae Rd
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Percent Similarity:
Best Local Similarity:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      genome.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Alignment Scores:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   157
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Query Match:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     No.:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        DEFINITION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ORGANISM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ACCESSION
                                gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 RESULT 10
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       KEYWORDS
SOURCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      REFERENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    AUTHORS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  CDS
                                                                                                                 CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  TITLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               VERSION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               U32793
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Score:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     NSPSYNPNNISGTPKEAMRNRTITDVFEPGSTVKPMVVMTALQRGVVRENSVLNTIPY
RINGHEIKDVARYBELTLIGVLQKGSNVGVSKLALIMPSSALVDTYSRFGLGKATNLG
LYGERSGLYPDKQRRSDIERATFSFGYGLMYTPLQLARVYATIGSYGTYRPLSITRYD
PPVPGERVPEDSIYRTVVHMMESVALPGGGGVKAAIKGYRIAIKTGTAKKVGPDGRYI
NYTARYTAGYAPASOPFFALVYINDPQAGKYYGGAVSAPVFGAIMGGVLRTMNIEPD
ALTTGDKNEFVINQGEGTGGRS"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    /translation="MISVTLSQLTDILNGELQGADITLDAVTTDTRKLTPGCLFVALK
GERFDAHDFADQAKAGGAGALLVSRPLDIDLPQLIVKDTRLAFGELAAWVRQQVPALV
VALTGSSGKTSVKEMTAAILSQCGNTLYTAGNLNNDIGVPMTLLRLTPEYDYAVIELG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ADNNDWLNWQSVIGSRKVWRFSPNAANSDFTATNIHVTSHGMEFTLQTPTGSVDVLLP
LPGRHNIANALAAAALSMSVGATLDAIKAGLANLKAVPGRLFPIQLAENQLLLDDSYN
                                                                                                                                                                                                                                                                                                                                                                                                                         /translation="MKAAAKTQKPKRQEEHANFISWRFALLCGCILLALAFLLGRVAW
LQVISPDMLVKEGDMRSLRVQQVSTSRGMTTDRSGRFLAVSVPVKAJRADPKEVHDAG
ELGVISPDMRALANALNIPLDGLSARINANPKGRFIYLARQVNSDMADYIKKLKLPGIH
LREESRRYPSGEVTAHLIGFTNVDSQGIEGVEKSFDKWLTGQPGERIVRKDRYGRVI
EDISSTDSQAAHNLALSIDERLQALVYRELNNAVAFNKAESGSAVLVDVNTGEVLAMA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                SAVDVQHELAGLVDQGATFCAMEVSSHGLVQHRVAALKFPASVFTNLSRDHLDYHGDM
EHYEAAKWILYSEHHCGQAIINADDEVGRRWLAKLPDAVAVSWEDHINPNCHGRWIKA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         TEVNYHDSGATIRFSSSWGDGEIESHLMGAFNVSNLLLALATLLALGYPLADLLKTAA
RLQPVCGRMEVFTAPGKPTVVVDXAHTPDALEKALQAARLHCAGKLWCYFGCGGDRDK
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ANHQGEIAWTVSLTRPEAALVNNLAAAHLEGFGSLAGVAKAKGEIFSGLPENGIAIMN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       QADGRRY I PQA I AQCVAA I I AEAKDEATDGE I REMHGVPVI YLSQLNERLSALAGRFY
HEPSDNLRLVGVTGTNGKTTTTQLLAQWSQLLGETSAVMGTVGNGLLGKV I PTENTTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ANVGSMTAAVQVLAEMPGYRVLVVGDMAELGAESEACHVQVGEAAAAGTDRVLSMGK
QSHAISTASGVGEHPADKTALITRLKSLIAEQQVITILVKGSRSAAMEEVVRALQENG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               /translation="MADRNLRDLLAPWVPDAPSRALREMTLDSRVAAAGDLFVAVVGH
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              GKRPLMGAIAEEFADVAVVTDDNPRTEEPRAIINDILAGMLDAGHAKVMEGRAEAVTC
AVMQAKENDVVLVAGKGHEDYQIVGRQRLDYSDRVTVARLLGGIA"
                                                                                                                                                                                                                                                                                                                /product="septum formation; penicillin-binding protein 3;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             /locus_tag="SF0082"
/EC_number="6.3.2.13"
/FOC_mumber="6.3.2.13"
/note="Residues 1 to 495 of 495 are 99 pct identical to residues 1 to 495 of a 495 aa protein from Escherichia coli pir: $40595"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            /note="Residues 1 to 452 of 452 are 99 pct identical to residues 1 to 452 of a 452 aa protein from Escherichia coli K12 ref: NP_414628.1"
                                                                                                                                      /locus_tage="SF0081"
//ocus_tage="Residues 1 to 588 of 588 are 99 pct identical to residues 1 to 588 of a 588 aa protein from Escherichia coli 0157:H7 EDL933 ref: NP_285780.1"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 /product="UDP-N-acetylmuramoylalanyl-D-glutamate--2,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 /product="D-alanine:D-alanine-adding enzyme"
/protein_id="AAN41748.1"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      6-diaminopimelate ligase"
/protein_id="AAN41747.1"
/db_xref="GI:24050288"
                                                                                                                                                                                                                                                                                                                                        peptidoglycan synthetase"/
/protein_id="AAN41746.1"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          /db_xref="GI:24050289"
                                                                                                                                                                                                                                                                                                                                                                                                 /db_xref="GI:24050287"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               /locus_tag="SF0082"
3860, .5347
/gene="murE"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                locus_tag="SF0083"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       /locus_tag="SF0083"
                                                     locus_tag="SF0081"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                transl_table=11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         /transl_table=11
                                                                                                                                                                                                                                                                                     /transl_table=11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        'codon_start=1
                                                                                                                                                                                                                                                             /codon_start=1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              5344. .6702
/gene="murF"
                                                                                                     /gene="ftsI"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  3860. .5347
/gene="murE"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               /gene="murF"
2107. .3873
/gene="ftsI"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             .6702
```

gene

CDS

gene

CDS

```
/product="pencillin-binding protein 3 (fts1)"
/product="pencillin-binding protein 3 (fts1)"
/protein_id="AAC22787.1"
/db_xref="G1:1374687.1"
/db_xref="G1:1374687"
/translation="www.nxfnxsrxsgkskxirktrapetykonkpokyfekcpmkgky
MLSTVLILGLCALVARAAYVOSINADTLSNEADKRSLRKDBVLSYRGSILDRNGQLL
SVSPWSRAIVADPKTMLKENSLADKERIAALAELGWTEDDVKKIEKKNSKSCYLYLA
RQVELSKANTYRRLKKGILIZEHRREYPRYEEAAHVYGYTDIOGKGIEGTEKSFRS
LLVGKDGSRTVRKDKRGNIVAHISDEKKYDAQDVTLSIDEKLQSMYYEIKKAVSENN
ASSGTAALVDVRTGEVLAMATARSYRNNRVGYKSEMARNATITDFEEGESTVRVETVY
LTALORGCVVKRDBIIDTTSFKLGSKEIVDVARSEMARNATITOFFEGEGSTVKPFVY
LTALORGCVVKRDBIIDTTSFKLGKEIVDVARPRAQOTLDEILANSSRRGVSRLARNE
PSALMETYQNAGLSKPTDLGLIGEQVGILNANRRRADIERATVAYGYGITATPLQIA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         RAYATLGSFGVYRPLSITKVDPPVIGKRVESEKITKDIVGILEKVAIKNRRAMVEGYR
VGVKTGTARKIENGHYVNKYVAFTAGIAPISDPRYALVVLINDPKAGEYYGGAVSAPV
FSNIMGYALRANAIPQDAEAAENTTTKSAKRIVYIGEHKNOKVN"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               /mote="similar to GB:D10483 SP:P22188 GB:X55814 PID:285768 PID:5810122 percent identity: 55.72; identified by sequence similarity: putative"
/codon_statc=1
/codon_statc=1
/product="UDP-N-acetylmuramyl-tripeptide synthetase (murb)"
                                                                                                                                                                                                                                                                                                                                                                               /translation-"MSENNKPRYPLQQILVEDLFSSNKLVVLLLIGILVSAMGTIWIT
HKTRQLISENGMLILQRQALENEYRNLQVQEATEGDSTRVESIAISTLKMKVVSSEQE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       /translation="MKKLTALFNLPELKNDIELHNMVLDSRKVKAGDLFVAIKGHQVD
GWQFIDSALHSGASAVVSETELSSEHLTVAFTGNVPVWKYQLQHHLSSLADVFYDSP
SNNLTLVGYGTNGTRTISQLLGHBAAVMGTIGNGLFGQIVEAKNTTGSAV
EIQSSLSAFKHAGADFTSIEVSSHGLAGHRAAVMGTIGNGLFGQIVEAKNTTGSAV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               5243. .6616
/gene="H11134"
/gene="H11134"
/gene="similar to GB:D10483 SP:P11880 PID:216500 PID:40854
PID:42048 percent identity: 51.88; identified by sequence
similarity; putative"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              AAAKKRLFTELDTQIKVINADDEIGYQWLTELPDAIAVSMNADFKVGSHQWMÄAINIH
YHKGADITPESSWGWOYLHSPLIGARFKVSNLLJATVTTLLEFGYPLENLLATAKGSLKG
VCGRWEMIQYPNKPTYVDVAHTPDALJEKALIAAREHCQGEIJACIFGCGGDRDRGKRP
LMAQVAEQFAEKIIVTKDNPRTESQSQIETDIVAGFKNMEKVGIIPDRAQAIQFAIES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          /product-"UDP-MurNAc-pentapeptide synthetase (murF)"
'ppotein_ad-"AAC2789.1"
'db_xref="G1:1574689"
/translation="MIKLSTVQLAQILQAKLIGDENVQVEKINTDTRKSVSNSLFFAL
                                                                                                                                   /note="similar to SP:P22187 GB:K00137 GB:S49802 GB:S49875 GB:X52063 percent identity: 36.63; identified by sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        /note="similar to GB:D10483 SP:P04286 GB:K00137 GB:S49802 GB:S49875 percent identity: 53.11; identified by sequence similarity; putative"
                                                                                                                                                                                                                                                                                       /product-"cell division protein (ftsL)"
/protein_id="AAC22786.1"
/db_xref-"GI:1574686"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         AVENDVILIAGKGHEHYQIIGSEVVHFSDQEIALDFLK"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              /protein_id="AAC22788.1"
/db_xref="GI:1574688"
                                                                                                                                                                                                  similarity; putative"
                                                                                                                                                                                                                                                                 /transl_table=11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   /transl_table=11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 /transl_table=11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       /gene="HII132".
1921. .3753
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              3763. .5229
/gene="HII133"
3763. .5229
/gene="HII133"
                                  /gene="Hill31"
1585, ,1908
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                1921. .3753
/gene="HI1132"
                                                                                                          /gene="HI1131"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      /codon_start=
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    /codon_start=1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                          .3753
                         gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                          gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     gene
                                                                              CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                /translation="MFKGATAVNLDSKGRVAIPTRYRAEILEKNGGGWVCTVDIRGSC
LLIYPLDEWEKIEGKLLALSNEDPTGRRLGRVMLGHATECEMDAGGRILLSGPLRQHA
KLEKCLMLVGLNKFEIWSDVEWHTGIAEDIEIGSSTDFAADALNDFSL"
617. .1582
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     /translation="mnsensessehitvllheavnglalkenglyidgtegegghsr
Filoglessorellavdrdpralaeahkigdlerdiehnspripeiddklulygkidg
Illdlgvsspqldeaergfsprkogpldmrmpttgglsaeewlkgvsiedltwyktf
Geerrakriatalvdbrksavkngtellsrsglaelisgavpfkdhryskga
IRIFINSELDELESLLNSALDMLAPEGRLSIISFHSLEDRWVKHFWKKQSKGEDIPKG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          /gene="H11130"
/note="similar to GB:D10483 SP:P18595 GB:X52063 PID:216497
PID:40850 percent identity: 62.09; identified by sequence
similarity; putative"
/codon_start=1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Medical Center Dr. Rockville, MD 20850, USA

The H. influenzae sequence has been updated by R. Fleischmann. New
database matches have been assigned, product names have been
improved, and a number of frame shifts have been corrected. We
gratefully acknowledge the work of Tatusov et. al. We have
incorporated their annotation into the /notes fields of the
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    /note="similar to SP:P22186 GB:X52063 PID:40849 PID:42319
681000096 percent identity: 59.21; identified by sequence
similarity; putative"
/codon_start=1
                                                                                                                                                                                                     Ø
                                                                                                                                                                                                                                                                                                                                                                                                                        Submitted (25-JUL-1995) The Institute for Genomic Research, 9712 Medical Center Dr. Rockville, MD 20850, USA (bases 1 to 11498)
White, O., Clayton, R.A., Kerlavage, A.R. and Fleischmann, R.D. Direct Submission
Submitted (27-SEP-1997) The Institute for Genomic Research, 9712
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Submitted (28-MAY-1998) The Institute for Genomic Research, 9712 Medical Center Dr. Rockville, MD 20850, USA
The whole genome was shifted by 588 nucleotides for a new start On Oct 1, 1996 this sequence version replaced 91:1221887.

Location/Qualifiers
                                                                                              2 (bases 1 to 11498)
Tatusov, R.L., Mushegian, A.R., Bork, P., Brown, N.P., Hayes, W.S., Bordowsky, M., Rudd, K.E. and Koonin, E.V. Metabolism and evolution of Haemophilus influenzae deduced from whole-genome comparison with Escherichia coli
                                                                                                                                                                                                                                                                                                                                         3 (bases 1 to 11498)
White,O., Clayton,R.A., Kerlavage,A.R. and Fleischmann,R.D.
Direct Submission
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        corresponding H. Influenzae genes
5 (bases 1 to 11498)
White, O., Clayton, R.A., Kerlavage, A.R., Fleischmann, R.D.,
Peterson, J., Hickey, E., Dodson, R. and Gwinn, M.
Direct Submission
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              LPLREDQIQRNQKLRIIGKAIQPSDAEIQANPRSRSAILRVAERI"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     /product-"conserved hypothetical protein"
/protein_id="AAC22784.1"
/db_xref="G1:1574684"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                /product="conserved hypothetical protein"
/protein_id="AAC22785.1"
/db_xref="GI:1574685"

    .11498
        /organism="Haemophilus influenzae Rd"
        /mol_type="genomic DNA"
        /db_xref="taxon:71421"

Science 269 (5223), 496-512 (1995)
95350630
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            /transl_table=11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       /transl_table=11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   131. .586
/gene="HI1129"
131. .586
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              /gene="HI1130"
617. .1502
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            131. .586
/gene="HI1129"
                                                                                                                                                                                                                                                                              96398784
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  source
                                                                                                                                                                                                                                                                                                                                   REFERENCE
AUTHORS
TITLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            TITLE
JOURNAL
                                                                                                                                                                                                                                              JOURNAL
MEDLINE
PUBMED
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      AUTHORS
TITLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       REFERENCE
AUTHORS
                                                                     PUBMED
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      gene
                                                                                                 REFERENCE
                                                                                                                             AUTHORS
                                                                                                                                                                                                                                                                                                                                                                                                                              JOURNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          REFERENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               JOURNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   COMMENT
FEATURES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          REMARK
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       REMARK
                                                                                                                                                                                         TITLE
```

40000

```
/db_xref="G1:12512783"
/translation="KKLDEIARLAGYSRTTASYVINGKAKOYRVSDKTVEKVWAVVRE
/translation="KKLDEIARLAGYSRTTASYVINGKAKOYRVSDKTVEKVAVVRE
HYPHDNAVAAGGLRAGGTRSGLVIPDLENFYYRTRIANYLERQARQRGYOLLIACSEDO
PDNEWRCIEHLLQROYDAIIYSTSLPPEHPFYGRWANDPFPIYALDREHTTSVV
GADQDDAEMLAEELRKFPAETVLYLGALPELSVSFLREGGFRTAWKDDPREVHFLYAN
                                                                                                                                                                                                                                                                                                                      AE005185 12791 bp DNA linear BCT 21-MAR-2001
Escherichia coli 0157:H7 EDL933 genome, contig 1 of 3, section 9 of
                                                                                                                                                                                                                                                                                                                                                                                                                                                           Escherichia coli O157:H7 EDL933
Escherichia coli 0157:H7 EDL933
Bacteria; Proteobacteria; Gammaproteobacteria; Enterobacteriales;
Enterobacteriaceae; Escherichia.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            1 (pases 1 to 12791)
Perna, N.T., Plunkett, G. III, Burland, V., Mau, B., Glasner, J.D.,
Perna, N.T., Plunkett, G. III, Burland, V., Mau, B., Glasner, J.D.,
Rose, D.J., Mayhew, G.F., Evans, P.S., Gregor, J., Kirkpatrick, H.A.,
Fosfai, G., Hackett, J., Klink, S., Boutin, A., Shao, Y., Miller, L.,
Grotbeck, E.J., Davis, N.W., Lim, A., Dimalanta, E., Potamousis, K.,
Apodaca, J., Anantharaman, T.S., Lin, J., Yen, G., Schwartz, D.C.,
Welch, R.A. and Blattner, F.R.
Genome sequence of enterohaemorrhagic Escherichia coli O157:H7
Nature 409 (6819), 529-533 (2001)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Perna, N.T., Plunkett, G. III, Burland, V., Mau, B., Glasner, J.D., Perna, N.T., Plunkett, G. III, Burland, V., Mau, B., Glasner, J.D., Rose, D.J., Mayhaw, G.F., Evans, P.S., Gregor, J., Kirkpatrick, H.A., Fosfai, G., Hackett, J., Klink, S., Boutin, A., Shao, Y., Miller, L., Grobeck, E.J., Davis, N.W., Lim, A., Dimalanta, E., Potamousis, K., Apodaca, J., Anantharaman, T.S., Lin, J., Yen, G., Schwartz, D.C., Welch, R.A. and Blattner, F.R.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              /note="Residues 1 to 334 of 334 are 100.00 pct identics to residues 1 to 334 of 334 from Escherichia coli K-12 Strain MG1655; B0080"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Direct Submission
Submitted (22-OCT-2000) Laboratory of Genetics, University of
Wisconsin, 445 Henry Mall, Madison, WI 53706, USA
Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       /product="transcriptional repressor of fru operon others"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        /function="regulator; Energy metabolism, carbon: Glycolysis"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           /organism="Escherichia coli 0157:H7 EDL933"
/mol_type="genomic DNA"
/strain="EDL933"
                                                                                                                                                                                Matches:
Conservative:
Mismatches:
                                                                     Indels:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       /note="enterohemorrhagic"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     /protein_id="AAG54384.1"
                                                                                             Gaps:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         /serotype="0157:H7"
/db_xref="taxon:155864"
                                                                                                                                       US-09-701-229-2 (1-448) x AX191762 (1-11498)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          /note="synonym: 20090"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               /codon_start=1
/transl_table=11
                                                                                                                                                                                                                                                                                                                                                                                                                AE005185.1 GI:12512782
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       /gene="fruR"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    /gene="fruR"
14.00
100.00%
100.00%
3.12%
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 72. .1076
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 72. .107\overline{6}
                                                                                                                                                                                                                                                                                                                                                                                             AE005185 AE005174
                       Percent Similarity:
Best Local Similarity:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           11206551
                                                                  Query Match:
                                                                                                                                                                                                                                                                                                                                                DEFINITION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ORGANISM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   TITLE
JOURNAL
MEDLINE
PUBMED
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           TITLE
JOURNAL
                                                                                                                                                                                                                                                                             RESULT 12
AE005185
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                REFERENCE
AUTHORS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   gene
                                                                                                                                                                                                                                                                                                                                                                                                ACCESSION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           REFERENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  AUTHORS
                                                                                                                                                                                                                                                                                                                                                                                                                                        KEYWORDS
SOURCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              FEATURES
                                                                                                                                                                                                                                g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   /traislation-"MLWMLAEYLVRYETAFNAISYITVRANLALLTALFISLWIGPKV
IKRLQILKFGQEVRNDGPESHFAKKGTPTMGGYMILFSIGVSTLLWANLANPYIWVCL
FVLFGYGAIGFVDDFRITTRKNTDGILARWKYFWMSVVALVALLWLYMGHDTDATRL
YDFFKDIMPROLGLFYIVLSYFVIYGTGANVILTAGEDGLAIMPTALVAGAFALIAWA
TGNVNFREYLHIPYIKYSSEVVYFCTAIVGASLGFLWFNYFPAQVFMGDYGSAFALIAWA
LGVVAILVRQEFLLVIMGGVFVVEALSVILQVGSYKLRKQRIFFRMAPIHHFFELKGWP
                                                                  GVAIINAEHNHLDIWGKEISNHAIQYFNGKDYSAKNIHHTSGGSTFTLISPGGEIEIT
TLPYLGEHNENKARLAATALAMWGATLTDVKAGLEGRSQVKRENEPIOYPHLLLLDDT
YNARKDSLCAAIDVLKGYDAFRILCYGDMKELGENSLAIHREVGQYINLVNLDDLVCSY
GNESAVISEAVSGKHFTDKTEMVDFLVPLIENQLQONKKVVVLGKGSRSMKMEDVIYS
                          RTVAMTGSSGKTTVKEMTASILQHTAADSEAVLFTNGNFNNDIGVPLTLLRLTEKHRF
AVIELGANHQNEINYTTKLVQPNAALINNIAPAHLEGFGSLAGVVQAKGEIYRGLTKN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         PAT 15-AUG-2001
       KGEKFDAHQYLDQAVSQGALALVVQQENSSISVPQLVVKDTRIALGELAKWLREKINP
                                                                                                                                                                                                                                                                           /note="similar to GB:D10483 SP:P15876 GB:X51584 PID:21650.
PID:40855 percent identity: 76.67; identified by sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Haemophilus influenzae
Haemophilus influenzae
Bacteria; Proteobacteria; Gammaproteobacteria; Pasteurellales;
Pasteurellaceae; Haemophilus.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Antisense antibacterial cell division composition and method Patent: Wo 0149775-A 44 12-JUL-2001;
Avi Biopharma, Inc. (US)
Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                     /transl_table=11
/product="phospho-N-acetylmuramoyl-pentapeptide-
transferase E (mray)"
/protein.id="AAC22790.1"
/db_xref="G1:1574690"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         linear
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         157 GluLeuTyrValLeuGluLeuSerSerPheGlnLeuGluThr 170
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        11498
14
0
0
0
0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          11498
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       /organism="Haemophilus influenzae"
/mol_type="genomic DNA"
/db_xref="taxon:727"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Length:
Matches:
Conservative:
Mismatches:
Indels:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         DNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ų
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             EPRVIIRFWIISLMLVLMGLVTLKLR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  AX191762 11498 bp
Sequence 44 from Patent W00149775.
AX191762 AX191762.1 GI:15209931
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               3701
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Length:
                                                                                                                                                                                                                                                                                                                          similarity; putative" /codon_start=1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      US-09-701-229-2 (1-448) x U32793 (1-11498)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               2509 g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   7815. .9128
/gene="Hill36"
7815. .9128
                                                                                                                                                                                     6610. .7692
/gene="HI1135"
                                                                                                                                                                                                                                                        /gene="HI1135"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                7815. .9128
/gene="HI1136"
                                                                                                                                                                                                                                .7692
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              14.00
100.00%
100.00%
3.12%
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               1842 c
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           0.00218
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          0.00218
                                                                                                                                                               LKDKIKC"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Iversen, P.L.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Percent Similarity:
Best Local Similarity:
Query Match:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 3446 a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Alignment Scores:
Pred. No.:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Alignment Scores:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               KEYWORDS
SOURCE
ORGANISM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         source
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 BASE COUNT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             .. on .
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              DEFINITION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ACCESSION
VERSION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               REFERENCE
AUTHORS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           RESULT 11
AX191762
                                                                                                                                                                                          gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    JOURNAL
                                                                                                                                                                                                                                  CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               FEATURES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              TITLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ORIGIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      LOCUS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              a
```

gene

CDS

gene

CDS

```
GISVGDRWKALANALNIPLDQLSARINANPKGRFIYLARQVRPDMADYIKKLEPERH
LREESRRYYPESGEVTAHLIGFTNVDSQGIEGVEKSFDKWLTGQPGERIVRKDRYGRVI
EDISSTDSQAAHNLALSIDERLQALVYRELNNANPRINAESGSAVLVDVNTGEVLAM
NSPSYRPNNLGSTPREAMRITITDVFEPGSTVKPNVVMTALQRGVYRENSVLATIPY
RINGHEIKDVARYSELTLTGVLQKSSNVGVSKLALAMPSSALVDTYSRFGLGRATNLG
PVGERSGLYFPSIVTYVHMMESVALPGGGGVKAAIKGYRTIGSYGIYRPLSITKVD
NKYIRTAGVARASDIERATFSFGYGLMYTPLQLARVYRTIGSYGIYRPLSITKVD
NKXIRTAGVARASDIERALFSKOYGLMYTPLQLARVYRTIGSYGIYRPLSITKVD
NKXIRTAGVARASDISPRALVYVINDPQAGKYYGGAVSAPVFGAIMGGVLRTMIEPD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              /note="Residues 1 to 495 of 495 are 98.98 pct identical to residues 1 to 495 of 495 from Escherichia coll K-12 Strain MG1655: B0085"
                                          /translation="MKAAAKTQKPKRQEEHANFISWRFALLCGCILLALAFLLGRVAW
LQVISPDMLVKEGDMRSLRVQQVSTSRGMITDRSGRPLAVSVPVKAIWADPKEVHDAG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   /traislation="madrnirdllapwvpdapsrairemtldsrvaagdlfvavvgh
QadgrryipQaiaqgvaaiIaEakgeatdgeiremhgvpviylgolnerlsalagrfy
Hepsdnixxvgvtgtngkttttqllaqwsqllgetsavmgtvgngllgkviptenttg
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   SAYDYOHELAGLYDOTROTT I CLIMAN SALLES TAWAIT TO NELLEGAY LPERITY E ENYDYOHELAGLYDOTROTAGE SAYDYOHELAGLYDON SALLES SAYDYOHELAGLYDON SALLES SENTEN SENTEN SENTEN SENTEN SENTEN SENTEN SALLES SAYDYOHELY SENTEN SALLES S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Anote-"Residues 1 to 452 of 452 are 99.33 pct identical to residues 1 to 452 of 452 from Escherichia coli K-12 Strain MG1655: B0086"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            /translation="MISVILSQLTDILNGELQGADITLDAVTTDTRKLTPGCLFVALK
GERFDAHDFADOAKAGGAGALLVSRPLDIDLPQLIVKOTRLAFGELAAWVRQOVPARV
VALTGSSGKTSVKEWTAAILSQCGNTLYTAGNLNNDIGVPWTLLRLTPEYDYAVIELG
ANHOGEIVWYNSLTRPEAALVNNLAAAHLEGFGSLAGVAKAKGEIFSGLPENGIAIN
ADNNDMLNMQSVIGSRKVWRSPNAANSDFTATNILVTSHGTFFTLQTPTGSVDVLLP
LPGRHNTANALAAAALSMSVGATLDAIKAGIGANLKAVPGRLFPIQLAENGLLLDDSYN
ANVGSWTAAVQVLAEMPGYRVLVVGDMAAELGAESEACHVQVGEAAKAAGIDRYLSVGR
QSHAISTASGVGEHFAEKTALITRLKSLIABQQVITILVKGSRSAAMEEVVRALQENG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 to 360 of 360 are 99.72 pct identical to of 360 from Escherichia coll K-12 Strain
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         /function="enzyme; Cell envelop: Murein sacculus,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             /function="enzyme; Cell envelop: Murein sacculus, peptidoglycan"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      /function="enzyme; Cell envelop: Murein sacculus,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         /product="meso-diaminopimelate-adding enzyme"
/protein_id="AAG54389.1"
/db_xref="GI:12512788"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             /codon_start-1
/transl_table-11
/product-"D-alanine:D-alanine-adding enzyme"
/protein_id-"ab654390.1"
/db_xref-"GI:12512789"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Length:
Matches:
Conservative:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        /note="synonym: 20096"
6694. :8052 .
/gene="murF"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         /note="synonym: 20095"
5210. .6697
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      /note="synonym: 20097"
8046. .9128
/gene="mray"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 peptidoglycan"
/note="Residues 1
residues 1 to 360
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              /transl_table=11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         /codon_start=1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    pept1dog1ycan
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         5210. .6697
/gene="murE"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               /gene="murE"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       /gene="mraY"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 0.00239
14.00
100.00%
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Percent Similarity:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Alignment Scores:
Pred. No.:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      CDS
                                                                                                                                                                                                                                                                                                                                                                                                    /function="orf; Unknown function"
/note="Residues 1 to 152 of 152 are 99.34 pct identical to
residues 1 to 152 of 152 from Escherichia coli K-12 Strain
SYEREAAAQLFEKWLETHPMPQALFTTSFALLQGVMDVTLRRDGKLPSDLAIATFGDN
ELLDFLQCPVLAVAQRHRDVAERVLEIVLASLDEPRKPKPGLTRIKRNLYRRGVLSRS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              /translation="Wergativnidskgrisyptryreqliebnaagomyctidihhpc
LilypipeweiiegkisrissmmpyerrygrilighasecomogagriliapVirqha
Glikevmiygofnkfeimdettwhqqvkedidaeglatgdiseriqdisi"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             LGEEGRILAIDRDPQAIAVAKTIDDPRRSIIHGPFSALGETVAERDLIGKIDGILLDL
GVSSPQLDDABERGESFWRDGPLDMRWDPTRGQSAAEWLQTAEEADIAWVLKTYGEERF
AKRIARAIVERNREOPWITRELAEVVAAATPVKKKKHPARRTFQANRIWVNSELEE
IEQALKSSLWYLARGGRILSIISFHSLEDRIVKRFWRENSRGPQVPAGLPWTEEQLKKL
GGRQLRALGKLMPGEEEVAENPRARSSVLRIAERTNA"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        /translation-"MMENYKHTTVLLDEAVNGLNIRPDGIYIDGTFGRGGHSRLILSQ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       /protein_id="aag54387.1"
/db_xref="GI:12512786"
/translation="MISRVTEALSKVKGSMGSHERHALPGVIGDDLLRFGKLPLCLFI
GILTANTVVTTAHHTRLLTAQREQLVLERDALDIEWRNLILEENALGDHSRVERIAT
3457. .5223
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              /function="orf; Not classified"
/note="Residues 1 to 313 of 313 are 100.00 pct identical
to residues 1 to 313 of 313 from Escherichia coli K-12
Strain MG1655: B0082"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           /transl_table=11
/product="septum formation; penicillin-binding protein 3;
peptidoglycan synthetase"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             /function="phenotype; Cell division"
/note="Residues 1 to 121 of 121 are 100.00 pct identical
to residues 1 to 121 of 121 from Escherichia coli K-12
Strain MG1655: B0083"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            3457. .5223 // Appearance of the control of the con
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            /transl_table=11
/product="cell division protein; ingrowth of wall at
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    /transl_table=11
/product="orf", hypothetical protein"
/protein_id="AAG54385_1"
/db_xref="G1:12512784"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        /product="putative apolipoprotein"
/protein_id="AAG54386.1"
/db_xref="G1:12512785"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           /protein_id="AAG54388.1"
/db_xref="G1:12512787"
                                                                                                                                                                                                                                                          /note="synonym: 20091"
1678. .2136
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              /note="synonym: 20092"
2138. .3079
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  /note="synonym: 20093"
3076, .3441
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            'note-"synonym: 20094"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   /transl_table=11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    MG1655: B0081"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              /codon_start=1
                                                                                                                                                                                                     /gene="yabB"
                                                                                                                                                                                                                                                                                                                                                               gene-"yabB"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              /gene="yabc"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  3076. .3441
/gene="ftsL"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   /gene="yabC"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             3076. .3441
/gene="ftsL"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 3457. .5223
/gene="ftsI"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    .3079
```

gene

CDS

gene

CDS

δλ g

```
Uniect Submission

Submitted (13-07-1998) Laboratory of Genetics, University of Misconsin, 445 Henry Mall, Madison, WI 53706, USA

Misconsin, 445 Henry Mall, Madison, WI 53706, USA

This sequence was determined by the E. coll Genome Project at the University of Misconsin-Madison (Frederick R. Blattner, director). Supported by NIH grants HG00301 and HG01428 (from the Human Genome Project and NGHGR). The entire sequence was independently determined from E. coll K12 strain MG1655. Predicted open reading frames were determined using GeneMark Software, Kindly supplied by Mark Borodovsky, Georgia Institute of Technology, Atlanta, GA, 3032 [e-mail: mark@amber.gatech.edu]. Open reading frames that have been correlated with Genetic loci are being annotated with CG Site Nos., unique ID nos. for the genes in the E. coll Genetic Stock Center (CGSC) database at Xale University, kindly supplied by Mary Berlyn. A public version of the database is accessible (http://cgsc.blology.yale.edu). Annotation of the genome is an ongoing task whose goal is to make the genome sequence more useful by correlating it with other data. Comments to the authors are appreciated. Updated information will be available at the E. coli (enome till annotations are periodically updated; this is version M54. No sequence changes. Annotational assignments courtesy of Monica Riley; added promoters, protein binding sites, and repeated sequence described in reference 1. The unique numeric identifiers
                                                                                                                                                                                                                                                                                                                                                                  AE000118 21757 bp DNA linear BCT 01-DEC-2000
Escherichia coll K12 MG1655 section 8 of 400 of the complete
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Enterobacteriaceae; Escherichia.

1 (bases 1 to 21757)

Blattner,F.R., Plunkett,G. III, Bloch,C.A., Perna,N.T., Burland,V., Riley,M., Collado-Vides,J., Glasner,J.D., Rode,C.K., Mayhew,G.F., Gregor,J., Davis,N.W., Kirkpatrick,H.A., Goeden,M.A., Rose,D.J., Mau,B. and Shao,Y.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Bacteria; Proteobacteria; Gammaproteobacteria; Enterobacteriales;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Direct Submission
Submitted (16-JAN-1997) Guy Plunkett III, Laboratory of Genetics,
University of Wisconsin, 445 Henry Mall, Madison, WI 53706, USA.
Email: ecoli@genetics.wisc.edu Phone: 608-262-2534 Fax:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Submitted (02-SEP-1997) Guy Plunkett III, Laboratory of Genetics, University of Wisconsin, 445 Henry Mall, Madison, WI 53706, USA. Email: ecoli@genetics.wisc.edu Phone: 608-262-2534 Fax:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          The complete genome sequence of Escherichia coli K-12 Science 277 (5331), 1453-1474 (1997)
                                                                                                                                                                                                                9587 GAACTGTACGTACTGGAACTGTCGAGCTTCCAGCTGGAAACC 9628
                                                                                                                                                                             157 GluLeuTyrValLeuGluLeuSerSerPheGlnLeuGluThr 170
   000
Mismatches:
Indels:
                                                                                                                     US-09-701-229-2 (1-448) x AE005185 (1-12791)
                                                                                                                                                                                                                                                                                                                                                                                                                                                    AE000118 U00096
AE000118.1 GI:1786262
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    4 (bases 1 to 21757)
Plunkett, G. III.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               (bases 1 to 21757)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         to 21757)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Escherichia coli K12
Escherichia coli K12
   100.00%
                            3.12%
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Direct Submission
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Direct Submission
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Blattner, F.R.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                608-263-7459
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Blattner, F.R.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             608-263-7459
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   (bases 1
Best Local Similarity:
                            Query Match:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             SOURCE
                                                                                                                                                                                                                                                                                                                                                                                           DEFINITION
                                                                                                                                                                                                                                                                                                                                                                                                                                                    ACCESSION
VERSION
KEYWORDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        AUTHORS
TITLE
JOURNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      REFERENCE
AUTHORS
TITLE
JOURNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    REFERENCE
AUTHORS
TITLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               PUBMED
REFERENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          TITLE
JOURNAL
                                                                                                                                                                                                                                                                                                         RESULT 13
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        REFERENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 AUTHORS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      MEDLINE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               JOURNAL
                                                                                                                                                                                                                                                                                                                                  AE000118
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           COMMENT
```

```
beginning with a lowercase 'b' assigned to each gene (protein- or RNA-encoding) are now designated as gene synonyms instead of labels. This should allow them to be searched for in Entrez as gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             QETEFVISYEDFHRPEFTSVPLFKDEMVLVASKNHPTIKGPLLKHDVYNEQHAAVSLD
RFASFSQPWYDTVDKQASIAYQGMAMMSVLSVVSQTHLVAIAPRWLAEEFAESLELQV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   /translation="MTHSTAMDSVFIRTRIFWFSEFYSFCFFLFYMHDKSYSSGLFLC
IPIRERELSVTVELSMPEVQTDHPETAELSKPQLRMVDLNLLTVFDAVMQEQNITRAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     HVLGMSQPAVSNAVARLKVMFNDELFVRYGRGİQPTARAFQLFGSVRQALQLVQNELP
GSGFEPASSERVFHLCVCSPLDSILTSQIYNHIEQIAPNIHVMFKSSLNQNTEHQLRY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         /note="0373; 100 pct identical to LEUO_ECOLI SW:
P10151(290 aa) but contains 59 additional N-ter aa and 24
C-term residues; 100 pct identical to PIR: $40589 but
contains 24 additional C-term residues"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             /product="probable transcriptional activator for leuABCD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          function="putative regulator; Amino acid biosynthesis:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             complement(519. 537)
/note="central position to predicted promoter: -319.5"
/bound_molety="TyrR predicted site"
                                                                                                                                                                                                                                                                                                                                                                                                                               /function="leader; Amino acid biosynthesis: Leucine"
/note="f28; 100 pct identical to LPL_ECOLI SW: P09149"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         /note="central position to predicted promoter: -28.5"
/bound_molety="Lrp predicted site"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     complement(354. .368)
/note="No predicted promoter"
/bound_moiety="Lrp documented site"
complement(354. .368)
/note="central position to leuABCD promoter: -156.5"
/bound_moiety="Lrp documented site"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     complement(201. .221)
/note="central position to predicted promoter: -0.5"
/bound_molety="LexA predicted site"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        462. .490
/note="factor Sigma70; predicted +1 start at 84042"
complement(519. .537)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        'note="factor Sigma70; promoter leu; documented +1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        554. .565
/note="central position to predicted promoter:64"
/bound_moiety="AraC predicted site"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              /translation="MTHIVRFIGLLLINASSLRGRRVSGIQH" complement(197, 226)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      /product="leu operon leader peptide"
/protein_id="AAC73186.1"
/db_xref="G1:1786263"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       complement(201. .221)
/note="No predicted promoter"
/bound_molety="LexA predicted site"
                                                                                                                                                                coli K12"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               /protein_id="AAC73187.1"
/db_xref="GI:1786264"
                                                                                                                                                                                    /mol_type="genomic DNA"
                                                                                                                                                             /organism="Escherichia
                                                                                                                                                                                                                                                                                                                                                  /note="synonym: b0075" complement(77. .163)
                                                                                                                                                                                                                                                                       /db_xref="taxon:8333"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               /note="synonym: b0076"
                                                                                                                                                                                                                                              /sub_strain="MG1655"
                                                                                                                                                                                                                                                                                             complement(77. .163)
                                                                                                                                                                                                                                                                                                                                                                             7. .163)
                                                                                                            Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             /transl_table=11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       /transl_table=11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          complement (201.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    /codon_start=1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              /codon_start=1
                                                                                                                                                                                                                  /strain="K12"
                                                                                                                                                                                                                                                                                                                           /gene="leuL"
                                                                                                                                                                                                                                                                                                                                                                                                      'gene="leul"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    /gene="leuo"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 /gene="leuo"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   460. .474
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    at83735"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Leucine"
                                                                                     names.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       protein_bind
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           protein_bind
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             protein_bind
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       protein_bind
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     protein_bind
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  protein_bind
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                protein_bind
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                promoter
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               promoter
                                                                                                                                          source
                                                                                                                                                                                                                                                                                                  gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             gene
                                                                                                                                                                                                                                                                                                                                                                          CDS
                                                                                                            FEATURES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           CDS
```

```
1 (bases 1 to 22201)
Heidelberg, J.F., Elsen, J.A., Nelson, W.C., Clayton, R.A., Gwinn, M.L., Dodson, R.J., Haft, D.H., Hickey, E.K., Peterson, J.D., Umayam, L., Ermolaeva, M.D., Vamathevan, J., Pattelin, H., Richardson, D., Ermolaeva, M.D., Vamathevan, J., Bass, S., Qin, H., Dragol, I., Sellers, P., McDonald, L., Utterback, T., Fleishmann, R.D., Nierman, W.C. and White, O.
DNA sequence of both chromosomes of the cholera pathogen Vibrio cholerae
                                                                                                                                                                                                                                 AE004310 22201 bp DNA linear BCT 31-JUL-2000 Vibrio cholerae chromosome I, section 218 of 251 of the complete
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      /note="similar to GB:D10483 SP:P04036 GB:M10611 PID:145710 PID:1364855; identified by sequence similarity; putative" /codon_start=1
/transl_table=11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  /translation="WVRIAIAGAAGRWGRNLVKATHONPLSELGAGSERPESSLVGVD
IGELCGIGGOGIVLVDNLEGAPVEGPTOYIDFTABASTICALALCEGWGRKLVIGTTGF
TDAQRQTIEGAAKKIPIVMARNYSVGVNLVFKLLEKARVWGDYCDIEIIEAHRHKV
DAPSGTAIGMGEAIAHAMGNOLSDVAVVAREGITGERSRNEIGFATIRAGDIIGEHTA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ., Gwinn, M.L.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      /gene="VC2392"
/note="similar to GB:D10483 SP:P08337 GB:M20791 GB:X04831
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          (bases 1 to 22201)
Heidelberg, J.F., Elsen, J.A., Nelson, W.C., Clayton, R.A., Gwinn, M.L. Dodson, R.J., Haft, D.H., Hickey, E.K., Peterson, J.D., Umayam, L.A., Gill, S.R., Nelson, K.E., Read, T.D., Tettelin, H., Richardson, D., Ermolaeva, M.D., Vamathevan, J.D., Tettelin, H., Dragoi, I., Sellers, P., McDonald, L., Utterback, T., Fleishmann, R.D., Nierman, W.C., White, O., Salzberg, S.L., Smith, H.O., Colwell, R.R., Mekalanos, J.J., Venter, J.C. and Fraser, C.M.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Submitted (14-JUN-2000) The Institute for Genomic Research, 9712 Medical Center Dr, Rockville, MD 20850, USA Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        MFADIGERVEITHKATDRWTFANGAVKAAIWLAEQPAGFYTMIDVLGLNDL"
complement(1196. .1594)
                                                                                                                                                                                                                                                                                                                                                                                               Vibrio cholerae
Bacteria; Proteobacteria; Gammaproteobacteria; Vibrionales;
Vibrionaceae; Vibrio.
                                                                                        /product="dihydrodipicolinate reductase"
/protein_id="AAF95534.1"
/db_xref="GI:9656964"
    0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               /organism="Vibrio cholerae"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Nature 406 (6795), 477-483 (2000) 20406833
                                               US-09-701-229-2 (1-448) x AE000118 (1-21757)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     /mol_type="genomic DNA"/strain="N16961"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   /note="blotype: El Tor" complement(272. .1081)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                complement(1196. .1594)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             complement(272. .1081)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          /db_xref="taxon:666"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  /chromosome="I'
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 /gene="VC2391"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     /gene="VC2391"
                                                                                                                                                                                                                                                                               chromosome.
AE004310 AE003852
AE004310.1 GI:9656963
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     /serotype="01
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        /gene="VC2392
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            1. .22201
                                                                                                                                                                                                                                                                                                                                                                          Vibrio cholerae
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 source
                                                                                                                                                                                        RESULT 14
AE004310/c
                                                                                                                                                                                                                                                       DEFINITION
                                                                                                                                                                                                                                                                                                                                                                                               ORGANISM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                  REFERENCE
AUTHORS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             REFERENCE
AUTHORS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            JOURNAL
MEDLINE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  gene
                                                                                                                                                                                                                                                                                                    ACCESSION
                                                                                                                                                                                                                                                                                                                            VERSION
KEYWORDS
SOURCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      JOURNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            PUBMED
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      FEATURES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 TITLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 TITLE
                                                                                             ö
                                                                                                                                      g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               TTGHKGQIKRALQTLVAAKKPVYVGGGAITAGCHQQLKETVEALNLPVVCSLMGLGA
FPATHRQALGMLGMHGTYEANMTMHNADVIFAVGVRFDDRTTNNLAKYCPNATVLHID
IDPTSISKTVTADIPIVGDARQVLEQMLELLSQESAHQPLDEIRDWWQQIEQWRARQC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    /translation-"MFMSLAANCLSKIGRLMCFTHFFRQTVRQAMEMLSGAEMVVRSL
IDQGVKQVFGYPGGAVLDIYDALHTVGGIDHVLVRHEQAAVHMADGLARATGEVGVVL
VTSGPGATNAITGIATAYMDSIPLVVLSGQVATSLIGYDAFQECDMVGISRPVVKHSF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  LKYDTHSEKIKPQAVIETLWRLTKGDAYVTSDVGQHQMFAALYYPFDKPRRTNSGĞL
GROFGELPBAALGVKMALDEEFYVCVTGOGSIQNINIQELSTALQYELPVLVVNLNNRYL
GWYKQWQDAIYSGRHSOSYMOSLDPBYVRLABRYGHVGIQISHPHELESKLSEALEQVR
NNRLVFUDVTVDGSEHVYPMQIRGGGMDEMMLSKTERT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         LVKQTEDIPQVLKKAFWLAASGRPGPVVVDLPKDILNPANKLPYVWPESVSMRSYNP1
                                                                                                                     at
                                                                                                                                                                                                                                                           at
                                                                                                                                                                                                                                                                                                                                                                                                                                        955. 1984
'note="factor Sigma70; promoter ilvIHp2; documented+1 at
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              /note="factor Sigma70; promoter ilvIHpl; documented+1 at 85597"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     unction="enzyme; Amino acid biosynthesis: Isoleucine,
                                                                                        1813, 1839
/hote="factor Sigma70; promoter ilvIHp4; documented+1
85394"
                                                                                                                                        1833. 1847
/note="central position to predicted promoter: -8.5"
/bound_moiety="Lrp predicted site"
1838. 1866
%hote="factor Sigma70; promoter ilvIHp3; documented+1
85420"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                /note="0604; 98 pct identical (1 gap) to 522 residues fironinvl_Ecols sw: P00893 (566 aa)" (codon_start=1 /crodon_start=1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              product="acetolactate synthase III, valine sensitive,
                     1978. 1992

Anote—"central position to predicted promoter:136.5"

Anond_moiety="Lrp predicted site"

1995. ..3809

9ene="ilvi"
                                                                                                                                                                                                                                                                                                                                                                                        note="central position to predicted promoter:107.5"
bound_molety="Lrp predicted site"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         'note="central position to predicted promoter:156.5"
'bound_moiety="Lrp predicted site"
                                                                                                                                                                                                                                                                                           915. .1929
note="central position to predicted promoter:73.5"
bound_molety="Lrp predicted site"
LPLPLKQNSRTCYLSWHEAAGRDKGHQWMEEQLVSICKR"
1802. .1816
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              21757
14
0
0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Matches:
Conservative:
Mismatches:
Indels:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Length:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      /protein_id="AAC73188.1"
/db_xref="G1:1786265"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       /note="synonym: b0077"
1995, .3809
/gene="ilv1"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          /note="synonym: b0078"
1812. .4303
/gene="ilvH"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  EC_number-"4.1.3.18"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             /EC_number="4.1.3.18"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      arge subunit"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             1998. .2012
/gene="ilvi"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    2017. .2045
/gene="ilvI"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               3812. .4303
/gene="11vH"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    14.00
100.00%
100.00%
3.12%
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                0.00385
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               /aline
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Percent Similarity:
Best Local Similarity:
                     protein_bind
                                                                                                                                                         protein_bind
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           protein_bind
                                                                                                                                                                                                                                                                                                  protein_bind
                                                                                                                                                                                                                                                                                                                                                                     protein_bind
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           protein_bind
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Alignment Scores:
                                                                                           promoter
                                                                                                                                                                                                                               promoter
                                                                                                                                                                                                                                                                                                                                                                                                                                           promoter
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         promoter
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Query Match:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Pred. No.:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Score:
```

gene

CDS

gene

CDS

```
/translation="MIRQRIKEIVKTTGVGLHSGRKVTLTLERPAAANTGIIVRRTDV
NPPUDFPADPASVRDTMLCTALVNDGGVRISTVEHLNAALAGMGIDNAIIEVDAPEIP
IMDGSASPPVYLLLQOAGOTULNAPKRFIRIKEVRIEDGDKNAEFVPRGFRENDFEIE
FNHPAIDGDDORLVFDFSSQGFVKEISRARTFGFMRDIEYLQSQNLCLGGSFDCAIVL
DOYRILNEGGREPUNEFVHKVLDAIGDLYNAGHAIVGEFRAYKSGHGLNNQLLRAVL
ADGEAMEWATFEEEVGSPVAFAEPNNVIA"

/gene="VC2397"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             /codon_start=1
/transl_table=11
/transl_table=11
/product="cell division protein FtsA"
/product="cell division protein FtsA"
/protein_id="akr95541.1"
/db_xref="c1:9656971"
/translation="MYRTVDDNIIVGLDIGTATVSALVGEILPDGQINIIGAGSSPSR
/translation="MYRTVDNNIIVGLDIGTATVSALVGEILPDGQINIIGAGSSPSR
/ARDNGGVNDLESVVKSVQRAIDOARAMAECKISHVFLSISGRHIASRIEKGMGTISDE
EVSQEDMDRAHTMASIKIGEEQRILHVIPOGETIKNPLGLSGVRWEVSVHL.
ITCHNDMARNIIKAVERGELKVEQLVYSGLAASNAVITEDERELGVCVVDIGAGTMDI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           /translation-"MFEPMMEMSDDAVIKVVGVGGGGGNAVEHMVRESIEGVEFMSIN
TDAQALRKTSVGTVIQIGGNITKGLGAGANPQVGRDAALEDKERIKEFLTGADMVFIA
AGMGGGTGTGAAPVIAEVAKELGILIVAVVTKPFSFEGKKRLAFAEQGIEELSKHVDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      LITIPNEKLLKVLGRGITLLEAFASANNVLKNAVQGIAELITRPGMINVDFADVRTVM
SERGHAMGSGVARGEDRAEBAEAFALSSPLLEDDIDAGARGVLVNITAGLDMENDER
STYGNTYKAFASDNATVVI OF SLADPDAADEIRVTVVARTGIGKEK PDITLVAGGKSKV
APVSAPVTSRVEEKAAQPLHERVEVKTQPAAAPSHSSASQSVAPKPEKESGYLDIPAF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            AIWTGGALRHTEVFSYAGNAVTSÖIAFAFGTPVSDAEEIKVKYGCALSELVSKDDTVN
YSVGGRPSKSRIARGYROTLSEVTERTYEELMGLYNQTVDSVQESLRKEGIKHHLAAGVVL
TGGAGIEGLYACAERYFRNQVRVGKPLEVSGLTDYVKEPYHSTAVGLLHYARDSQIS
DDTEVQEPKRPSMIGHIGRLRNWIQKEF"
                                                                                                                                                                                                                                                                            complement(6401. .7597)

complement(6401. .7597)

forene="vor2397"

/note="similar to GB:D10483 SP:P06138 GB:X02821 PID:216509

PID:40863; identified by sequence similarity; putative"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              WMWDEQRLPLSKLVLQGDLHYVSÄLDVQRVLARLDHIGTFMSQDINVLQESVQSIPWV
SHASIRKQWDPDIKVYLTEYQVEALMANALLDKNGYVPFYGDLARVNGBYVKLYGBDG
SHAPOVLKAWDDYNFREAQLGLNISSLVLNDRRAWQIILDNGIRLELGKESLEERISRF
FLLYKQLGNRAEQVSYIDLRYDFGAAVGWFPEQELTQEKNDD*
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 /translation="MINKVLLEGQRITRSPQVKQHACGASFFLVVLLLIGGLLYSTIS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     /note="similar to GB:D10483 SP:P06136 GB:K02668 GB:X02821
PID:145725; identified by sequence similarity; putative"
/codon_start=1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     /gene="VC2398"
/note="similar to GB:D10483 SP:P06137 GB:K02668 GB:M36531
GB:X02821; identified by sequence similarity; putative"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      /product="cell division protein FtsQ"
/protein_id="AAF95542.1"
/db_xref="GI:9656972"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                 /product="cell_division protein FtsZ"
/protein_id="AAF95540.1"
/db_xref="G1:9656970"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Conservative:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Mismatches:
Indels:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Length:
Matches:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               complement(9847. .11367)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                /gene="VC2400"
complement(9847. .11367)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Gaps:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           complement(7628. .8890)
/gene="VC2398"
complement(7628. .8890)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          complement(8883. .9665)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    complement(8883. .9665)
                                                                                                                                                                                                                                                                                                                                                                                                             /codon_start=1
/transl_table=11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            /transl_table=11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           /gene="VC2399
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              /gene="VC2399"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              100.00%
100.00%
3.12%
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       0.00391
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        14.00
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    LRROAD"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Percent Similarity:
Best Local Similarity:
Query Match:
DB:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Alignment Scores:
Pred. No.:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   gene
                                                                                                                                                                                                                           gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             CDS
                                                                                                                                                                                                                                                                                  CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Score:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        /translation="WEDHRPTATDELIQASKIKQIOEHAKAILLINROLODILPKGLK
TQVRAANVRGGNLVLEAASAALKMKVDYERLHILTQLRQNGFGHLISIEVRVNPELYR
QSKITSEDARAANPRPPLSEHAAHVLLAIADQASDKVKKRLQSLARLAKANQKDD"
                                                                                                                                                    /db_xref="G1:9656965"
/translation="MKRIHTVAGIIENSDQSEIFITKRPDHLHKGGFWEFPGGKVEAG
ESREQAMVRELEEEIGITVVPEQQAFOHFDFPYTDKSLSFDFMLVTAFDGQPHGREGQQ
GGWVKIADLANYRFPEANDPVVKQVIAQFG"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  /translation-"MDAFQGATPVFLADVNFSCIPFLLKATAVLAVTSSCLGIKRVAL ATLLFNKVKLA"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       MPQPAKKEAYQADILYGTNNEFGFDYLRDNMAFRPEDRYQRARFFAVUDEVDSILIDE
ARTPLIISGPAEDSSDLYIRINKLIPLLQRQDKEDSEEYRGDGHFTVDEKSKQYHLTE
YIQDEFYEELLYKNGMMQEGDTLYSPANISLHHYNAALABHYLFEKNVDYIYTPDGEY
YIYDEHTGRYMPGRRADGLAQAVEAKEGYKIQNENQTLASITFQNYFRLYEKLSGMT
GTADTEAFEFQDIYGLETYVIPTNKPWYRNDMPDVYYRSEAEKFAAIIEDIKQRVEKQ
OPVLVGTVSIEKSELLSNALKRAGIKHNVLNAKFHEKREAEIVAEAGKPGAYTATNWA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         GRGTDIVLGGSWQAKVEKLDNPTQEQIDAIKAEWKOVHDQVLQAGGLHIIGTERHESR
RIDNQLRGRSGRQGDAGSSRFYLSMEDTLLRIFTSDRWAALIQSGMDEGEAIESKMLS
RSIEKAQRKVEGRNFDIRKQLLEYDDVANDQRKVYYELRDELMSADDISDMIAQNRED
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   VLNAVMDEY I PPQSLEDMWD I KGLEDRLK NDFDLP LQ SWLDADNK LY EEALRER I I EAQVEYY KARGAVSPAVWRNEKSYNALQTLDTLWKEHLAMDHLIRQG HLLKGYRAKN PROGEY KRESFELFEDLLESLK SOVITYLSK YRVQOQEBEVERMEAQRRAQAEEAARHAQ AQHASADDAEQDESUQPWRDERKYGRNEPCPCGSGKKYKQCHGQIN"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          /note="similar to GB:D10483 SP:P10408 GB:M20791 PID:147794 PID:216512; identified by sequence similarity; putative"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             /traislation="mitklifkvigsrndrtlrrirkivketinnyepafealsdeelk
aktvefrorleggenldollpeafatvreaskrvfgmrhfdvoliggmvlhggolaem
rtgegktltatlaaylnalpgkgvhivtvndylakrdaetnrplefeflgmtvgvnipn
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               'product="UDP-3-0-3-hydroxymyristoyl N-acetylglucosamine
PID:147795; identified by sequence similarity; putative"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    /note="similar to GB:D10483 SP:P07652 PID:145848
PID:216510 PID:40864; identified by sequence similarity;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     /product="preprotein translocase, SecA subunit"
/protein_id="AAF95537.1"
/db_xref="GI:9656967"
                                                                                                                                                                                                                                                                         1580. .1747
/gene="VC2393"
1580. .1747
/gene="VC2393"
/note="identified by Glimmer2; putative"
/codon_start=1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   /note-"identified by Glimmer2; putative"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 /product="hypothetical protein"
/protein_id="AAF95538.1"
/db_xref="G1:9656968"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           /product="hypothetical protein"
/protein_id="AAF95536.1"
/db_xref="GI:9656966"
                                                                                             /product="mutator MutT protein"
/protein_id="AAF95535.1"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         /protein_id="AAF95539.1"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             complement(1744. .4455)
/gene="VC2394"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   complement(1744. .4455)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            complement(5386, .6303)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      complement(5386. .6303)
                                                                /transl_table=11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           /transl_table=11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                    /transl_table=11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   /transl_table=11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  /transl_table=11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              4809. .5282
/gene="VC2395"
4809. .5282
/gene="VC2395"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   /gene="VC2396"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   /gene-"VC2394"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        /codon_start=1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   /codon_start=1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            /gene="VC2396"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  deacetylase"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        putative"
```

gene

CDS

gene

õ ద

```
/translation="maekfpohtglvvpldaanvdpdaiipkoflokvtrtgfgahle
ndmrpldekgoondefvlnppeyogasillarenfgggssrehapmaltdygfkvvi
apsfadifygnsfnnollpvtlsdaqvdelfalvkanpgikfevdleaqvvkagdkty
sfkiddfrrhcmlngldsigltlohedaiaayenkopafmr"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   /translation-**MAKTLYEKLEDAHVVEBAPNETDLLYIDRHLVHEVTSPQAFDGL
RAHRRPVRQPGKTRATWDHNVSTQTKDINASGEMARIOMQELIKNCNEFGVELYDLNH
PYGLYVHVMPPEGGYTLFØRNIVCEDBHTATHGAFGALAFGIGTSEVEHVLATQTLKQ
GRAKTWKIEVTGNAAPGITAKDIVLAIIGKTGSAGGTGHVVEFCGDAIRALSHEGRMT
LCNMAIEMGAKAGLVAPDETTFNYVKGRLHAPKGRDFDEAVEYWKTLKTDDGATFDTV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          /product="3-1sopropylmalate dehydrogenase"
/protein_id="AaLi9076.1"
/db_xref="G1:16418611"
/translation="MSKNYHJAVLFGDGIGPEVMAQALKVMDAVRSRFDMRITTSHYD
VGGIALDNHGHPLPRATVEGCEDABALLFGSVGGPKWENLPPESQPERGALLFLPRKHF
KLFSNLRPAKLYGGLEAFCPLRADIAANGFDILCVRELTGGTYFGQPKGREGSGGYEK
RAFDEVYHRFEERIAAITAFESARKRKRYTSLADANJCANNLOFSSILWRETVPDD
VELAHYIDNATWQLIKDPSGPDVLLCSNLFGDILSDECAMITGSMGMLPSASLNEGG
FGLYEPAGGSAPDIAKNIANPIAQILSLALLLRYSLDANDATAIEGAINRALEEGV
RTGDLARGAANSTDEMGGITARYVAEGV"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   TDVAIDKVFIGSCTNSRIEDLRAAAEVAKGRKVAPGVQALVVPGSGPVKAQAEAEGLD
KIFIEAGFEWRLPGCSMCLAMNNDRLNPGERCASTSNRNFEGRQGRGGRTHLVSPAMA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       VALRAEEIAPQVTWGTNPGQVISVTDIIPDPASFSDPVERASAEKALAYMGLQPGVPL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              /note="3-isopropylmalate dehydrogenase. (SW:LEU3_SALTY)"
                                                                                                                                                                                                                                                                                                                                                                                                                      /note-"putative RBS for leuD; RegulonDB:STMS1H000490"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    /note="putative RBS for leuC; RegulonDB:STMS1H000491"
complement(3408. .4999)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             /note-"similar to E. coli 2-isopropylmalate synthase (AAC73185.1); Blastp hit to AAC73185.1 (523 aa), 92% identity in aa 1 - 523"
                                                                                    //ransi_table=11
/product="3-isopropylmalate isomerase (dehydratase),
subunit with LeuC"
/protein.id="AAL:19074.1"
/db_xref="G1:16418609"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     /product-"3-isopropylmalate isomerase (dehydratase),
subunit with LeuD"
/protein.id="ALI9075.1"
/db_xref-"GI:16418610"
/note="3-isopropylmalate dehydratase small subunit. (SW:LEUD_SALTY)"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     /note="3-isopropylmalate dehydratase large subunit.
(SW:LEU2_SALTY)"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             /transl_table=11
/product="2-isopropylmalate synthase"
/protein_id="AAL19077.1"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                             /gene="leuc"
/note="synonym: STM0111"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              /note-"synonym: STM0112"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      /note="synonym: STM0113"
complement(3408. .4979)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     complement(2317. .3422)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          complement(2317. .3408)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              complement(2322. .2327)
                                                                                                                                                                                                                                                                                                                                                                                                                                                    complement(914. .2327)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         .2314)
                                                                                                                                                                                                                                                                                                                                                         complement(910. .915)
/gene="leuD"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                /EC_number="4.2.1.33"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              /EC_number="4.1.3.12"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             /EC_number="1.1.1.85"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     /codon_start=1
/transl_table=11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            AAAAVTGHFADIRSIK"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        /transl_table=11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      complement (914.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                /codon_start=1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    /codon_start=1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   /gene="leuB"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           /gene="leuA"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     /gene="leuB"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         /gene="leuB"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                /gene="leuA"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           /gene="leu(
                                                                                                                                                                                                                                                                                                                                                                                                                                                       gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      gene
                                                                                                                                                                                                                                                                                                                                                            RBS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              RBS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          1 (bases I to 22348)
McClelland,M., Sanderson,K.E., Spieth,J., Clifton,S.W.,
Latrelle,P., Courtney,L., Porwollik,S., Ali,J., Dante,M., Du,F.,
Hou,S., Layman,D., Leonard,S., Nguyen,C., Scott,K., Holmes,A.,
Stoneking,T., Wulvaney,E., Ryan,E., Sun,H., Florea,L., Miller,W.,
Stoneking,T., Nhan,M., Waterston,R. and Wilson,R.K.
Complete genome sequence of Salmonella enterica serovar Typhimurium
                                                                                                                                                                                                                                      AE008699 22348 bp DNA linear BCT 23-APR-2003 Salmonella typhimurium LT2, section 7 of 220 of the complete
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 This sequence was finished as follows unless otherwise noted: all regions were double stranded, sequenced with an alternate chemistries or covered by high quality data (i.e., phred quality >= 30; an attempt was made to resolve all sequencing problems, such ass compressions and repeats; all regions were covered by sequence from more than one ml3 subclone.

Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                        Salmonella typhimurium LT2
Bacteria; Proteobacteria; Gammaproteobacteria; Enterobacteriales;
Enterobacteriaceae; Salmonella
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Coding sequences below are predicted from manually evaluated computer analysis, using similarity information and the programs; GLIMMER; http://www.ligr.org/softlab/glimmer/glimmer.html and GeneMark; http://opal.biology.gatech.edu/GeneMark/
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            The analyses of ribosome binding sites and promoter binding sites were kindly provided by Heladia Salgado, Julio Collado-Vides and
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       EC numbers were kindly provided by Junko Yabuzaki and the Kyoto Encyclopedia of Genes and Genomes; http://www.genome.ad.jp/kegg/and Pedro Romero and Peter Karp at EcoCyc; http://ecocyc.PangeaSystems.com/ecocyc/
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Direct Submission
Submitted (29-MR-2001) Genome Sequencing Center, Department of
Submitted (29-MR-2001) Genome Sequencing Center, Department of
Genetics, Washington University School of Medicine, 4444 Forest
Park Boulevard, St. Louis, MO 63108, USA
COMMENT Supported by NIH grant 50 01 AI43283
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              http://kinich.cifn.unam.mx:8850/db/regulondb_intro.frameset
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Salmonella typhimurium Genome Sequencing Project
                                                                                    GluLeuTyrValLeuGluLeuSerSerPheGlnLeuGluThr 170
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      1. .22348
/organism="Salmonella typhimurium LT2"
/mol_type="genomic DNA"
/strain="IT2; SGSC 1412; ATCC 700720"
/db_xref="ATCC:700720"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        /note="synonym: STM0110"
complement(298. .903)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Nature 413 (6858), 852-856 (2001)
US-09-701-229-2 (1-448) x AE004310 (1-22201)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        /db_xref="taxon:99287"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               complement(298. .915)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  /gene="leuD"
/EC_number="4.2.1.33"
                                                                                                                                                                                                                                                                                                                                                                                                                Salmonella typhimurium LT2
                                                                                                                                                                                                                                                                                             genome.
AE008699 AE006468
AE008699.1 GI:16418608
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   (bases 1 to 22348)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                /gene="leuD"
                                                                                                                                                                                                                                   AE008699
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          11677609
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     RequonDB
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               he
                                                            157
                                                                                                                                                                                                                                                              DEFINITION
                                                                                                                                                                                                                                                                                                                                                                                                                                           ORGANISM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             REFERENCE
AUTHORS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 AUTHORS
CONSRTM
                                                                                                                                                                                                                                                                                                                           ACCESSION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        TITLE
                                                                                                                                                                                                                                                                                                                                                   VERSION
KEYWORDS
SOURCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            MEDLINE
PUBMED
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 JOURNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   REFERENCE
                                                                                                                                                                                                        AE008699
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              FEATURES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          TITLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        COMMENT
```

```
/trainiation="MOGOVIIPDTILEDGEQALQASISAKEKLQIALALERMCVDVME
VGFPVSSPGDFESVQTIARTIKNSRVCALARCVEKDIDVAAQALKVADAFRIHTFIAT
SPHATAKINSTLDEVIERAYVMVKRARNYTDDVBESCEDAGRTPVDDLARVVEAAIN
AGARTINIPDTVGTMPFEERALISGLYENRYDNIDKALISVHTHDDLGIAVGNSLAAV
HAGARQVEGAANGIGERAGNCALEEVIMAIKVRKDIMNVHNINHHEIWRFGYTVSQI
CNMPIPANKALVGSGAFAHSSGIHQDGVLKNRENYEIMTPESIGLNQIQLNLTSRSGR
ANKHRMEEMGYKDTDVNMDHLYDAFLKLANKRGOVFDYDLEALAFINKQOEBEHFR
LDYFSVQSGSSDIATASVKLAAGGEEKABANGNGPYDAIYQAINNITGROPELKYD
LNAKGGKDALGQVDIVVNHGRRFHGVGLATDIVESSAKAMVHVLNNIWRAAEVEKE
LOKKAQNERBIKETV"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 TLGMSQPAVSNAVARLKVMFNDELFVRYGRGIQPTARAFQLFGSVRQALQLVQNELPG
SGFEPTSSERVFNLCVCSPLDNILTSQIYNRVEKIAPNIHVVFKASLNQNTEHQLRYQ
ETEFVISYEEFRRPEFTSVPLFKDEWYLVASRKHPRISGPLLEGDVYNEQHAVVSLDR
YASFSQPWYDTPDKQSSVAYQGMALISVLNVVSQTHLVAIAPRWLAEEFAESLDLQIL
PLPHKLNSRTCXLSWHEAAGRDKGHQWMEDLLVSVCKR"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             translation="MPEVKTEKPHLLDMGKPQLRMVDLNLLTVFDAVMQEQNITRAAH
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    /product="putative LysR family transcriptional regulator"
/protein_id="AAL19079.1"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  /note="putative RBS for leuL; RegulonDB:STMS1H000494"
complement(5271. .5279)
/gene="leuL"
                                                                                                                                                                                                                                           complement(3417. .3422)
/gene="leuB"
/note="putative RBS for leuB; RegulonDB:STMS1H000492"
/gene="leuA"
                                                                                                                                                                                                                                                                                                                                             /note="putative RBS for leuA; RegulonDB:STMS1H000493"
complement(5067. .5298)
/gene="leut"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         /note="putative RBS for leu0; RegulonDB:STMS1H000495"
8810. .6754
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    note-"probable activator protein in leuabcd operon
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                (SW:LPL_SALTY)"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            /translation="MSHIVRFTGLLLLNAFIVRGRPVGGIQH"
complement(5162..5167)
/gene="leuL"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 complement(5290..5298)
/gene="leuf"
/note="putative -35_signal for leuL;
5798..6754
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   /product="leu operon leader peptide"
/protein_id="AAL19078.1"
/db_xref="G1:16418613"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               /note="putative -10_signal for leuL;
RegulonDB:STMLTH004472"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        /note="leu operon leader peptide./codon_start=1
                                                                                                                                                                                                                                                                                                                                                                                                                                                /note="synonym: STM0114"
complement(5067. .5153)
/gene="leut"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              'note="synonym: STM0115"
3798. .5803
'gene="leu0"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     'db_xref="GI:16418614"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            SW: LEUO SALTY)"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              /transl_table=11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               /transl_table=11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  798. .6754
gene="leuo"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   810. .6754
/gene="leuo"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             protein_bind
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                -10_signal
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             -35_signal
                                                                                                                                                                                                                                                                                                                                                                                                      gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   RBS
                                                                                                                                                                                                                                                     RBS
                                                                                                                                                                                                                                                                                                                              RBS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                            CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           RBS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   CDS
```

Length:
Matches:
Conservative:
Mismatches:
Indels:

0.00394 14.00 100.008 100.008 3.128

> Percent Similarity: Best Local Similarity:

Query Match: DB:

Alignment Scores:

.. No.. US-09-701-229-2 (1-448) x AE008699 (1-22348)

Search completed: August 14, 2003, 10:38:49 Job time : 4461 secs

THIS PAGE BLANK (USPTO)

```
GenCore version 5.1.6
Copyright (c) 1993 - 2003 Compugen Ltd.
```

(without alignments) 3445.437 Million cell updates/sec August 14, 2003, 04:47:05; Search time 351 Seconds OM protein - nucleic search, using frame\_plus\_p2n model Run on:

2260 1 msliasdhfrivvglgksgm.....mfknfeergrlfakaveela 448 US-,09-701-229-2 Perfect score: Sequence:

Xgapop 10.0 , Xgapext Ygapop 10.0 , Ygapext Fgapop 6.0 , Fgapext Delop 6.0 , Delext **BLOSUM62** Scoring table:

2552756 seqs, 1349719017 residues Searched:

Total number of hits satisfying chosen parameters:

Minimum DB seq length: 25 Maximum DB seq length: 200000000

Listing first 45 summaries Post-processing: Minimum Match 0% Maximum Match 100%

Command line parameters:

-WODEL-frame+\_p2n.model -DEV-x1p -Q-Cq02\_1/102FOC\_spool/US09701229/runat\_09082003\_161156\_4371/app\_query.fasta\_1.647 -Q-Cq02\_1/102FOC\_spool/US09701229/runat\_09082003\_161156\_4371/app\_query.fasta\_1.647 -LOOPEXT-0 -UNITS-bits -START-1 -END--1 -MATRIX-blosum62 -TRANS-human40.cdi -LIST-45 -DOCALIGN-200 -TRR-SCORES-Pot -THR\_MAX=100 -THR\_MIN-0 -ALIGN-15 -USER-US09701229\_@CGN\_1\_1\_471\_@runat\_09082003\_161156\_4371 -NCPU-6 -ICPU-3 -NOD-LCAL -OUTFMT-pto -NORM-ext -HEAPSIZE-500 -MINIEN-25 -MAXIEN-200000000 -NORE-LCAL -OUTFMT-pto -NORM-ext -HEAPSIZE-500 -MINIEN-25 -MAXIEN-2000000 -NORM-TARGEQUERY -NEG\_SCORES-0 -WAIT -DSPLACK-100 -LONGLOG -FGAPEXT-7 -YGAPOP-10 -YGAPEXT-0.5 -DELOP-6 -DELEXT-7

/SIDS1/gcgdata/geneseq/geneseqn-emb1/NA2002.Dar: /SIDS1/gcgdata/geneseq/geneseqn-emb1/NA2003.DAR: /SIDS1/gcgdata/geneseq/geneseqn-emb1/NA1984.DAT/SIDS1/gcgdata/geneseq/geneseqn-emb1/NA1985.DAT/SIDS1/gcgdata/geneseq/geneseqn-emb1/NA1986.DAT/SIDS1/gcgdata/geneseq/geneseqn-emb1/NA1987.DAT/SIDS1/gcgdata/geneseq/geneseqn-emb1/NA1987.DAT data/geneseq/genesegn-emb1/NA1993 /SIDS1/gcgdata/geneseqn-embl/NA1994/SIDS1/gcgdata/geneseq/geneseqn-embl/NA1995/SIDS1/qcqdata/nanana/ /SIDS1/gcgdata/geneseq/geneseqn-embl/NA1998 /gcgdata/geneseq/geneseqn-embl/NA1980. /gcgdata/geneseg/genesegn-embl/NA1988 /SIDS1/gcgdata/geneseq/geneseqn-embl/NA1981 /gcgdata/geneseq/geneseqn-emb] /SIDS1/gcgdata/geneseq/ /SIDS1/gcgdata/geneseq/ /SIDS1/qcqdata/qeneseq /SIDS1/gcgdata/geneseg N\_Geneseq\_19Jun03:\* /SIDS1/gcgd /SIDS1/gcgd /SIDS1/ /SIDS1 Database

Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed,

and is derived by analysis of the total score distribution.

Description	aeru aeru typhi coli	. coll DNA for nomic fragment aemophilus inf Haemophilus inf uchnera sp. gen eisseria mening	N, meningitidis pa Neisseria meningit N, meningitidis B N, gonorrhoeae nuc Streptococcus pneu S, pneumoniae type Streptococcus nueu	n occees	Streptococcus poly Streptococcus poly Mycobacterium tube Mycobacterium tube Enterococcus faeca Enterococcus faeca Mycobacterium tube DNA encoding novel DNA encoding novel DNA encoding novel Cenomic sequence o Streptococcus poly Streptococcus poly Streptococcus poly
SUMMARIES	AAS5427 AAZ4713 AAS5634 AAH8146	AASS2295 AAF28548 AAF285453 AAT42063 ABA92787 AAZ53175	AAA81479 AAF21607 AAA81490 ABZ41528 AAX30137 AAX30335	AAV2.228 AAS55898 AAS55898 AAT39154 AAV33971 AAV355663 AAS89258 AAS892681 AAS892681 AAS804666 AAS6479 AAS64661 AAS6479 AAS646661 AAS6479	
DB 1	23		222 <u>2</u> 23	7 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	
Length	1347 1450 1317 1317	1317 96109 1314 1830121 640681	69936 349980 1437668 1335 2193 1350	216598 2162598 1353 1350 1353 1353 1353 1353 1080 1080 1080 1080 2703 2703	1365 215551 14011529 1368 1371 403765 4944 4944 2365589 1407 1103
% Query Match	100.0 100.0 43.8 43.6		31.2 31.2 31.2 26.7 26.3	22222222222222222222222222222222222222	22222222222222222222222222222222222222
Score	2260 2260 989.5 985.5	985.5 889.5 879 716 704	704 704 704 701 603.5	・・・・・・・・・・・・・・・・・・・・・・・・・・・・・・・・・・・・・・	529 529 529 529 519 519 510 510 510 510 510 510 510 510 510 510
Result No.	   H 42 W 44	108 40	1111111	1188 222 330 330 310	
Res	1	υ υυ	υ (	υ	0 0 0

ALIGNMENTS

AAS54275 standard; DNA; 1347 BP (first entry) 13-FEB-2002 AAS54275; RESULT 1 AAS5427 

Pseudomonas aeruginosa DNA for cellular proliferation protein #406 Antisense; ds; prokaryotic cellular proliferation gene; antibiotic; antibacterial; drug design.

Pseudomonas aeruginosa

WO200170955-A2.

a

us-09-701-229-2.p2n.rng

```
1020
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      1080
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           1140
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1200
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            CTGGACGAAGCAGTCCGGCAGGCCGCGAGCTGGCCGCGAAGGCGATGCGGTGCTGTTG 1260
                                                  120
                                                                         360
                                                                                                      140
                                                                                                                              420
                                                                                                                                                        160
                                                                                                                                                                                 480
                                                                                                                                                                                                             180
                                                                                                                                                                                                                                      540
                                                                                                                                                                                                                                                               200
                                                                                                                                                                                                                                                                                        9
                                                                                                                                                                                                                                                                                                                   220
                                                                                                                                                                                                                                                                                                                                            660
                                                                                                                                                                                                                                                                                                                                                                      240
                                                                                                                                                                                                                                                                                                                                                                                               720
                                                                                                                                                                                                                                                                                                                                                                                                                         260
                                                                                                                                                                                                                                                                                                                                                                                                                                                  780
                                                                                                                                                                                                                                                                                                                                                                                                                                                                             280
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       840
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                300
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         900
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    320
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              960
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        340
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             360
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  380
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       400
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          420
                                                                                                                                                        ThrargproteullealaaspthrValProCysTrpSerPheGlyLeuAsnLysProAsp
                                                                                                                                                                                                                                                                                                                                                                                                                         LeuArgThrProAlaLeuValGlnAlaAlaAlaLysGlyValArgIleSerGlyAspIle
                                                              AlaAlaLeuAlaLeuGlyHisAlaValGlyLeuProPheAspAlaMetLeuGlyAlaLeu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 PheHisaspLeuargGluProValalaargPheCysArgAlaValValLeuLeuGlyArg
                                                                                                                               361 AGCACCGTGACCACCCTGGTGGGCGAAATGGCGGTGGCCGCGGACAAGCGTGTCGCCGTC
                                                                                                                                                                                                                                                                  ValLeuAsnValSerGluAspHisMetAspArgTyrAspGlyMetAlaAspTyrHisLeu
                                                                                                                                                                                                                                                                                                                                                                                                  661 ACCCGACCGCTGATCGCCGATACCGTGCCGTGCTGGTCGTTCGGCCTGAACAAGCCGGAC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      LysalaPheSerGlyLeuAlaHisArgCysGlnTrpValArgGluArgGlnGlyValSer
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               GlyAlaAspIleAspGlyLysLeuValLeuLeuAlaGlyGlyAspGlyLysGlyAlaAsp
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           CTGCGCACCCCTGCGCTGGTACAGGCCGCCGCAAAGGCGTGCGCATCTCCGGTGACATC
                                                   AspLeuPheAlaArgGluAlaLysAlaProIleValAlaIleThrGlySerAsnAlaLys
                                                                                                      SerThrValThrThrLeuValGlyGluMetAlaValAlaAlaAspLysArgValAlaVal
                                                                                                                                                                                                                                                                                                                    AlaLysHisArgIlePheArgGlyAlaArgGlnValValValAsnArgAlaAspAlaLeu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                              LysLeuLeuProValGlyGluLeuLysIleArgGlyAlaHisAsnTyrSerAsnAlaLeu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    LeuaspGlualaValargGlnalaalaGluLeualaargGluGlyaspalaValLeuLeu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            AlaLysAlaValGluGluLeuAla 448
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      301
81
                                                                                                                                                                                                                                        481
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            1081
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 1141
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     1201
                                                   101
                                                                            301
                                                                                                      121
                                                                                                                                                                                                             161
                                                                                                                                                                                                                                                                 181
                                                                                                                                                                                                                                                                                                                    201
                                                                                                                                                                                                                                                                                                                                             601
                                                                                                                                                                                                                                                                                                                                                                       221
                                                                                                                                                                                                                                                                                                                                                                                                                                                                              261
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  281
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               341
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   361
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       381
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            401
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        1261
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    441
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               421
                                                                                                                                                                                                                                                                                        g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         쉽
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ò,
                       a
                                                   à
                                                                           셤
                                                                                                      ò
                                                                                                                              g
                                                                                                                                                                                 g
                                                                                                                                                                                                             ö
                                                                                                                                                                                                                                      a
                                                                                                                                                                                                                                                                 à
                                                                                                                                                                                                                                                                                                                     ò
                                                                                                                                                                                                                                                                                                                                             유
                                                                                                                                                                                                                                                                                                                                                                       ò
                                                                                                                                                                                                                                                                                                                                                                                                g
                                                                                                                                                                                                                                                                                                                                                                                                                            ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                 g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ŏ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ద
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ద
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ò
                                                                                                                                                                                                                                                                                                                         The invention relates to antisense inhibitors of genes essential to prokaryotic cellular proliferation, their use in identifying the genes, their use in the discovery of novel antiblocits, the essential genes themselves and the encoded proteins. The prokaryotes used are Escherichia coll, Staphylococus auceus, Salmonella typhi, Riebsiella premenniae, Pseudomonas aeruginosa and Enterococcus facealis. The Escherichia is also useful for the identification of potential new targets invention is also useful for the identification of potential new targets for antiblocit development. The antisense nucleic acids can also be used to identify proteins used in proliferation, to express these proteins. The proteins are be used to soreen compounds in rational drug discovery programmes. The antisense nucleic acid sequence is also useful to screen for homologous nucleic acids which are required for cell proliferation in essential prokaryotic cellular proliferation protein.

Note: The sequence data for this patent did not form part
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    240
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   40
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        09
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           80
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             SerLeuValArgTyrLeuAlaArgArgGlyLeuProPheAlaValValAspThrArgGlu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        AsnProProGluLeuAlaThrLeuArgAlaGlnTyrProGlnValGluValArgCysGly
                                                                                                                                                                                      G;
                                                                                                                                                                                                                                                                  oţ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           of the printed specification, but was obtained in electronic ormat directly from WIPO at
                                                                                                                                                                                      Trawick JD,
                                                                                                                                                                                                                                                               New polynucleotides for the identification and development antibiotics, comprise sequences of antisense nucleic acids
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   other;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Length:
Matches:
Conservative:
Mismatches:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   0
                                                                                                                                                                                    à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Ë
                                                                                                                                                                                   Wall
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 214 A; 453 C; 453 G; 227
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Indels:
                                                                                                                                                                                                                                                                                                     Claim 27; Seq ID No 7912; 511pp; English.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ftp.wipo.int/pub/published_pct_sequences
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Gaps:
                                                                                                                                                                                   Zyskind JW,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   (1-1347)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   US-09-701-229-2 (1-448) x AAS54275
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      1.27e-205
2260.00
100.00%
100.00%
                                               2000US-191078P.
2000US-206848P.
2000US-207727P.
2000US-242578P.
2000US-253625P.
2000US-257931P.
2001US-269308P.
                       2001WO-US09180
                                                                                                                                                                                 Ohlsen KL,
Xu HH;
                                                                                                                                                        (ELIT-) ELITRA PHARM INC
                                                                                                                                                                                                                       WPI; 2001-611495/70.
P-PSDB; AAU36416.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Percent Similarity:
Best Local Similarity:
                                             21-MAR-2000; 23-MAY-2000; 26-MAY-2000; 23-OCT-2000; 27-NOV-2000; 22-DEC-2000; 26-FEB-2001; 2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Sequence 1347
                      21-MAR-2001;
                                                                                                                                                                                 Haselbeck R,
Yamamoto RT,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Alignment Scores:
                                                                                                                                                                                Haselbeck
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       41
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  21
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Query Match:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Score:
```

ð 요 ð 셤 g

à g ò

160 530 180 590

290 100 350 120

80

200

650

220

710

280

890

260 830 360

400

```
AACCCGCCGGAGCTGGCCACCCTGCGTGCCCAGTATCCGCAGGTGGAAGTGCGTTGCGGC 230
                                                        LysLeuLeuProValGlyGluLeuLysIleArqGlyAlaHisAsnTyrSerAsnAlaLeu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       GGTGCCGACATCGACGCCAAGCTGGTGCTGCTCGCCGGCGGAGACGGCAAGGGCCGAT
                                                                                                                   GATCTCTTCGCCCGCGAGGCGAAGGCCCCGATCGTCGCCATCACCGGTTCCAACGCGAAG
                                                                                                                                                                                                                           ValLeuAsnValSerGluAspHisMetAspArgTyrAspGlyMetAlaAspTyrHisLeu
                                                                                                                                                                                                                                                                 AspLeuPheAlaArgGluAlaLysAlaProIleValAlaIleThrGlySerAsnAlaLys
                                                                                                                                                                           GlyGlyAsnLeuGlyThrProAlaLeuAspLeuLeuAlaAspAspIleGluLeuTyrVal
                                                                                                                                                                                                                 LeuGluLeuSerSerPheGlnLeuGluThrCysAspArgLeuAsnAlaGluValAlaThr
                                                                                                                                                                                                                                                                                                                                                                      PheLysAlaPheGlyLeuIleGluGluAspGlyGlnLysTrpLeuAlaPheGlnPheAsp
                                                                                                                                    SerThrValThrThrLeuValGlyGluMetAlaValAlaAlaAspLysArgValAlaVal
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 AspAlaGlyLeuIleAlaGlnAlaLeuGlyAsnAlaValProLeuValArgValAlaThr
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      LeuAspGluAlaValArgGlnAjaAlaGluLeuAlaArgGluGlyAspAlaValLeuLeu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1071
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            1131
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   1191
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        1251
                                      231
                                                                           291
                                                                                                                 351
                                                                                                                                                       411
                                                                                                                                                                           141
                                                                                                                                                                                             471
                                                                                                                                                                                                               161
                                                                                                                                                                                                                                                                         591
                                                                                                                                                                                                                                                                                                              651
                                                                                                                                                                                                                                                                                                                                                   711
                                                                                                                                                                                                                                                                                                                                                                                         771
                                                                                                                                                                                                                                                                                                                                                                                                                               831
                                                                                                                                                                                                                                                                                                                                                                                                                                                  281
                                                                                                                                                                                                                                                                                                                                                                                                                                                                    891
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          951
                    61
                                                         81
                                                                                                101
                                                                                                                                    121
                                                                                                                                                                                                                                   531
                                                                                                                                                                                                                                                       181
                                                                                                                                                                                                                                                                                            201
                                                                                                                                                                                                                                                                                                                                  221
                                                                                                                                                                                                                                                                                                                                                                      241
                                                                                                                                                                                                                                                                                                                                                                                                            261
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        301
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    341
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          361
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                381
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     401
                                                                                                                                                                                                                                                                                                            g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          g
                   δ
                                     g
                                                         ò
                                                                          g
                                                                                              ογ
                                                                                                                 엄
                                                                                                                                    ò
                                                                                                                                                    qq
                                                                                                                                                                          ò
                                                                                                                                                                                            g
                                                                                                                                                                                                              οy
                                                                                                                                                                                                                                 g
                                                                                                                                                                                                                                                     Óχ
                                                                                                                                                                                                                                                                      g
                                                                                                                                                                                                                                                                                       δ
                                                                                                                                                                                                                                                                                                                                  δ
                                                                                                                                                                                                                                                                                                                                                 g
                                                                                                                                                                                                                                                                                                                                                                      οy
                                                                                                                                                                                                                                                                                                                                                                                      g
                                                                                                                                                                                                                                                                                                                                                                                                         QY
                                                                                                                                                                                                                                                                                                                                                                                                                           g
                                                                                                                                                                                                                                                                                                                                                                                                                                                δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Qγ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             δy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             qq
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     쉽
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         δy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     οy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     110
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           170
                                                                                                                                                                                                                                                                                                                                                                  This sequence represents the MurD gene from Pseudomonas aeruginosa. MurD is an enzyme involved in blosynthesis of bacterial cell walls, so inhibiting it inhibitis bacterial growth (by preventing MurD-catalyzed addition of D-glutamate to an alanyl residue in the UDP-N-acetylmuramyl-L-alanine precursor). Cells that express murD protein can be used: (a) to identify inhibitors of MurD, and (b) for recombinant production of MurD, which is used to raise specific antibodies (potential therapeutic inhibitors). Fragments of the murD gene can be used as probes and primers to detect MurD-encoding sequences (to identify polymorphic murD genes or to detect P. aeruginosa), also as antisense modulators. The murD inhibitors are useful for treating or preventing bacterial infections, including those caused by P. aeruginosa.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   20
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        40
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       MetSerLeuIleAlaSerAspHisPheArgIleValValGlyLeuGlyLysSerGlyMet
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            AsnProProGluLeuAlaThrLeuArgAlaGlnTyrProGlnValGluValArgCysGly
                                                                                                                                                                                                                                                                                                                        the MurD protein of Pseudomonas aeruginosa, inhibitors -
                                                                                                                           D-glutamate;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 T; 0 other;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             1450
448
0
0
0
                                                                                                                           inhibitor;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Conservative:
Mismatches:
Indels:
                                                                                                                                    UDP-N-acetylmuramyl-L-alanine precursor; ds
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Length:
Matches:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                C; 487 G; 249
                                                                                                                          cell wall; biosynthesis;
US-09-701-229-2 (1-448) x AAZ47131 (1-1450)
                                                                                                         Pseudomonas aeruginosa murD qene.
                                                                                                                                                                                                                                                                                                                                                   Claim 4; Page 8-9; 35pp; English.
                                                ΒP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                227 A; 487
                                              AAZ47131 standard; DNA; 1450
                                                                                                                                                                                                                99WO-US11585.
                                                                                                                                                                                                                                                                         ä
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           1.4e-205
2260.00
100.00%
100.00%
                                                                                                                                                                                                                                  98US-0087308
                                                                                      (first entry)
                                                                                                                                                                                                                                                                                                                       New nucleic acid encoding
used to identify specific
                                                                                                                                                                                                                                                                       El-Sherbeini M, Azzolina
                                                                                                                                                      Pseudomonas aeruginosa.
                                                                                                                                                                                                                                                      & CO INC
                                                                                                                                                                                                                                                                                         WPI; 2000-072548/06.
P-PSDB; AAY56047.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Percent Similarity:
Best Local Similarity:
Query Match:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Sequence 1450 BP;
                                                                                                                          bacterial
                                                                                                                                                                                                                                                      (MERI ) MERCK
                                                                                                                                                                         WO9961050-A1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Alignment Scores:
Pred. No.:
                                                                                                                                                                                                               26-MAY-1999;
                                                                                                                                                                                                                                  29-MAY-1998;
                                                                                      28-MAR-2000
                                                                                                                                                                                            02-DEC-1999
         1321
                                                                 AAZ47131;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ч
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    51
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        21
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          111
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              41
                                                                                                                          MurD;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Score:
         셤
                                               à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            à
```

```
Alignment Scores:
Pred. No.:
                                                         Query Match
                                                                                                                   ò
                                                                                                                                         셤
                                                                                                                                                                ò
                                                                                                                                                                                       ద
                                                                                                                                                                                                               ð
                                                                                                                                                                                                                                     g
                                                                                                                                                                                                                                                                                  셤
                                                                                                                                                                                                                                                                                                                               g
                                                                                                                                                                                                                                                                                                                                                                               a
                                                                                                                                                                                                                                                                                                                                                                                                                             g
                                                                                                                                                                                                                                                                                                                                                                                                                                                   ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                         g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       a
                                                                                                                                                                                                                                                             ð
                                                                                                                                                                                                                                                                                                         ò
                                                                                                                                                                                                                                                                                                                                                        à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              . <del>Q</del>
                                                                                                                                                                                                                                                                                                                                                                                                      à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             å
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          οy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 The invention relates to antisense inhibitors of genes essential to prokaryotic cellular proliferation, their use in identifying the genes, their use in the discovery of novel antibiotics, the essential genes themselves and the encoded proteins. The prokaryotes used are Escherichia coli, Staphylococcus aureus, Salmonella typhi, Klebsiella pneumoniae, Pseudomonas aeruginosa and Enterococcus faecalis. The Encountion is also useful for the identification of potential new targets for antibiotic development. The antisense nucleic acids can also be used to identify proteins used in proliferation, to express these proteins. The proteins can be used to screen compounds in rational drug discovery programmes. The antisense nucleic acid sequence is also useful to screen for homologous nucleic acids which are required for cell proliferation in essential prokaryotic cellular proliferation protein.

Note: The sequence data for this patent did not form part form part form and allocations.
         Carr GJ;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           oŧ
                                                                                                                                                                                                typhi DNA for cellular proliferation protein #374
                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Trawick JD,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           New polynucleotides for the identification and development antibiotics, comprise sequences of antisense nucleic acids
                                                                                                                                                                                                                        Antisense; ds; prokaryotic cellular proliferation gene;
antibiotic; antibacterial; drug design.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Sequence 1317 BP; 258 A; 341 C; 427 G; 291 T; 0 other;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Wall D,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Claim 27; Seq ID No 9978; 511pp; English.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ftp.wipo.int/pub/published_pct_sequences
                                                                    Zyskind JW,
                                                        AlaLysAlaValGluGluLeuAla 448
                                                                                                                              ВР
                                                                                                                             AAS56341 standard; DNA; 1317
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         directly from WIPO at
                                                                                                                                                                                                                                                                                                                                                                2000US-206848P.
2000US-207727P.
                                                                                                                                                                                                                                                                                                                              21-MAR-2001; 2001WO-US09180
                                                                                                                                                                                                                                                                                                                                                     2000US-191078P.
                                                                                                                                                                                                                                                                                                                                                                                         2000US-242578P
                                                                                                                                                                                                                                                                                                                                                                                                   2000US-253625P.
2000US-257931P.
                                                                                                                                                                                                                                                                                                                                                                                                                           2001US-269308P
                                                                                                                                                                          (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Ohlsen KL,
Xu HH;
                                                                                                                                                                                                                                                                                                                                                                                                                                                 (ELIT-) ELITRA PHARM INC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        WPI; 2001-611495/70
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      P-PSDB; AAU38482.
                                                                                                                                                                                                                                                        Salmonella typhi
                                                                                                                                                                                                                                                                                WO200170955-A2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Haselbeck R,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Yamamoto RT,
                                                                                                                                                                                                                                                                                                                                                     21-MAR-2000;
                                                                                                                                                                                                                                                                                                                                                                                                  27-NOV-2000;
22-DEC-2000;
                                                                                                                                                                                                                                                                                                                                                                                                                          16-FEB-2001;
                                                                                                                                                                         13-FEB-2002
                                                                                                                                                                                                                                                                                                                                                                                         23-OCT-2000;
                                                                                                                                                                                                                                                                                                                                                                23-MAY-2000
26-MAY-2000
                                                                                                                                                                                                                                                                                                       27-SEP-2001
                                                                                                                                                                                                 Salmonella
                                                                             1371
           421
                                                       441
                                                                                                                                                    AAS56341;
                                                                             셤
                                                                                                                             å
                               8
                                                       à
```

```
315
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      129
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      149
                                                                                                                                                                                                                                                       141
                                                                                                                                                                                                                                                                                                                     195
                                                                                                                                                                                                                                                                                                                                                                                    255
                                                                                                                                                                                                                                                                                                                                                                                                                     109
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     375
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     435
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      169
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     495
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     170 ThrCysAspArgLeuAsnAlaGluValAlaThrValLeuAsnValSerGluAspHisMet 189
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      555
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       190 AspArgTyrAsp---GlyMetAlaAspTyrHisLeuAlaLysHisArgIlePheArgGly 208
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     615
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        228
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     675
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       248
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      726
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       268
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        786
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       288
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      846
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     30,8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     906
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        328
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       996
                                                                                                                                                                                                                      20
                                                                                                                                                                                                                                                                                      69
                                                                                                                                                                                                                                                                                                                                                      83
                                                                                                                                                                                                                     31 LeuProPheAlaValValAspThrArgGluAsnProProGluLeuAlaThrLeuArgAla
                                                                                                                                                                                                                                                                                                       GECATTATCGGTCTGGGCTTAACCGGACTCTTGCGTGGACTTTTTTCTCGCCCGCGC
                                                                                                                                                                                                                                                                                                                                                                        110 ProlleValAlaileThrGlySerAsnAlaLysSerThrValThrThrLeuValGlyGlu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        MetAlaValAlaAlaAspLysArgValAlaValGlyGlyAsnLeuGlyThrProAlaLeu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           150 AspLeuLeuAlaAspAspIleGluLeuTyrValLeuGluLeuSerSerPheGlnLeuGlu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         556 GACCGGTATCCGTTTGCTTTGCAACAGTACCGGGCGGCGAAACTGCGCGCGTCTACGAGAAG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         229 ValProCysTrpSerPheGlyLeuAsnLysProAspPheLysAlaPheGlyLeuIleGlu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          676 GAGCGCTCAGCTTTGGCGTCAATATGGGTGATTATCAC------CTTAATCGT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      727 CAGCAGGGCGAAACCTGGCTACGAGTCAAAGGTGAGGAGGTGCTGAACGTGAAAGATG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        LysIleArgGlyAlaHisAsnTyrSerAsnAlaLeuAlaAlaLeuAlaLeuGlyHisAla
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ValGlyLeuProPheAspAlaMetLeuGlyAlaLeuLysAlaPheSerGlyLeuAlaH1s
                                                                                                                                                       IleValValGlyLeuGlyLysSerGlyMetSerLeuValArgTyrLeuAlaArgArgGly
                                                                                                                                                                                                                                                                                      GlnTyrProGln---ValGluValArgCysGlyGluLeuAspAlaGluPheLeuCysSer
                                                                                                                                                                                                                                                                                                                                                      AlaArgGluLeuTyrValSerProGlyLeuSerLeuArgThrProAlaLeuValGlnAla
                                                                                                                                                                                                                                                                                                                                                                                                                       AlaalaLysGlyValArgIleSerGlyAspIleAspLeuPheAlaArgGluAlaLysAla
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      496 ACTACCTCAAGTTTGCAAGCGGCGGCGGCAACGTTCAACGTCACGTGAAGATCATATG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        209 AlaArgGlnValValValValAsnArgAlaAspAlaLeuThrArgProLeuIleAlaAspThr
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       249 GluAspGlyGlnLysTrpLeuAlaPheGlnPheAspLysLeuLeuProValGlyGluLeu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ArgCysGlnTrpValArgGluArgGlnGlyValSerTyrTyrAspAspSerLysAlaThr
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       CGCTTCCAGCTGGCGTTGGAGCATAACGGCGTTCGTTGGATCAACGACTCGAAAGCGACC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       GTGACGCCGCGGTGATGGATACTCGCGTGACGCCGCCGGGTCTGGATAAGCTG-
     1317
230
56
136
21
                                Conservative:
Mismatches:
Indels:
     Length:
Matches:
                                                                                     Gaps:
                                                                                                                    (1-1317)
                                                                                                                      x AAS56341
1.24e-84
989.50
64.56%
51.92%
43.78%
                                                                                                                      US-09-701-229-2 (1-448)
                                    Percent Similarity:
Best Local Similarity:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        269
                                                                                                                                                                                                                                                                                                                       142
                                                                                                                                                                                                                                                                                                                                                      70
                                                                                                                                                                                                                                                                                                                                                                                                                     90
                                                                                                                                                                                                                                                                                                                                                                                                                                                      256
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      130
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        289
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        309
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       847
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       907
```

```
1302
                                                                                            1068
                                                                                                                                                                                                            069 GCGCGCTATCTGACCGGCGATCGTATCCGCCTGTATTGCTTTGGGCGCGATGCCGCGAG 1128
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  The present invention describes a purified or isolated nucleic acid sequence (I) consisting essentially of one of the 93 nucleotide sequences given in AAH81202 to AAH81294, where expression of the nucleic acid in a microorganism is capable of inhibiting proliferation of a microorganism. (I) have antibacterial and antibiotic activities, and can be used in gene therapy. Expression of (I) in a microorganism inhibitis proliferation of the microorganism, and the manufactured antibiotic is useful for reducing the activity or level of a gene product required for
                                                                                                                                                                                                                                                                                                                       444
                                                                                                                                                                                         404
                                                                                                                                                                                                                                                       ValArgGlnAlaAlaGluLeuAlaArgGluGlyAspAlaValLeuLeuSerProAlaCys 424
AsnValGlyAlaAlaLeuAlaAlaIleGluGlyLeuGlyAlaAspIleAspGlyLysLeu
                    ValLeuLeuAlaGlyGlyAspGlyLysGlyAlaAspPheHisAspLeuArgGluProVal
                                                                              021 CATCTGCTGCTGGGCGGCGACGGTAAGTCGGCAGACTTT----TCTCCGCTG
                                                                                                                                                                                                                                                                                    1183 Arecerrrecreccecececerrreacceeergararecrecrerrereccecerec
                                                                                                                                                                                                                                                                                                                  425 AlaSerLeuAspMetPheLysAsnPheGluGluArgGlyArgLeuPheAlaLysAlaVal
                                                                                                                                                                                                                                                                                                                                        AlaArgPheCysArgAla------ValValLeuLeuGlyArgAspAlaGlyLeu
                                                                                                                                                                                         IlealaGlnAlaLeuGlyAsnAlaValProLeuValArgValAlaThrLeuAspGluAla
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Escherichia coli protein encoding nucleotide sequence SEQ ID NO:259
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Novel nucleic acids encoding proteins required for Escherichia coli
proliferation, useful for screening for antimicrobial agents -
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Escherichia coli; identification; proliferation; microorganism; antimicrobial; antibacterial; antibiotic; gene therapy; diagnosi bacterial growth inhibition; ds.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Claim 9; Page 388-389; 596pp; English.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Zyskind JW;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ВЪ.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 AAH81460 standard; DNA; 1317
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         19-DEC-2000; 2000WO-US34419.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         99US-0173005
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        (ELIT-) ELITRA PHARM INC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Ohlsen KL,
                                                                                                                                                                                                                                                                                                                                                                                                                 1303 AAGGAGTTA 1311
                                                                                                                                                                                                                                                                                                                                                                                   GluGluLeu 447
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     2001-457376/49.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Escherichia coli
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     P-PSDB; AAG98404
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           WO200148209-A2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         23-DEC-1999;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Forsyth RA,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               21-SEP-2001
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           05-JUL-2001
                                                                                                                                                                                         385
                                                                                                                                                                                                                                                       405
329
                                                             349
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               AAH81460;
                                                                                                                                                                                                                                                                                                                                                                                   445
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     WPI:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                    AAH81460
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                à
                                                                                        ద
                                                                                                                        ρý
                                                                                                                                                        ద
                                                                                                                                                                                      ò
                                                                                                                                                                                                                   a
                                                                                                                                                                                                                                                      ò
                                                                                                                                                                                                                                                                               g
                                                                                                                                                                                                                                                                                                                  ŏ
                                                                                                                                                                                                                                                                                                                                                  ద
                                                                                                                                                                                                                                                                                                                                                                                  ò
```

```
615
                                                                                                                                                                                                                                                                                                                                                                                                                                                                               141
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              255
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  AlaAlaLysGlyValArgIleSerGlyAspIleAspLeuPheAlaArgGluAlaLysAla 109
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                315
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               129
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           375
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            MetalaValalaalaaspLysArgValalaValGlyGlyAsnLeuGlyThrProAlaLeu 149
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        435
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       150 AspleuLeuAlaAspAspIleGluLeuTyrValLeuGluLeuSerSerPheGlnLeuGlu 169
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ThrCysAspArgLeuAsnAlaGluValAlaThrValLeuAsnValSerGluAspHisMet 189
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               555
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 208
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        GAACGCTGCGTCAGCTTTGGCGTCAACATGGGTGACTATCAC------CTGAATCAT 726
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            69
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        89
proliferation of a microorganism in a subject, specifically humans. The nucleic acids that inhibit bacterial growth or proliferation can be used as antisense therapeutics for killing bacteria. In addition to therapeutic applications, the nucleic acid sequences complementary to sequences required for proliferation can be used as diagnostic tools.
                                                                         For example, nucleic acid probes complementary to proliferation-required sequences that are specific for particular species of microorganisms can be used as probes to identify particular microorganism species in clinical specimens. AAMB1487 encode the Escherichia coli proteins given in AAG98239 to AAG98431, and AAMB1488 to AAMB1491 represent oligonucleotides, which are used in the exemplification of the
                                                                                                                                                                                                                                                                                                                                                                                                               87
                                                                                                                                                                                                                                                                                                                                                                                                                                               20
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  AspArgTyrAsp---GlyMetAlaAspTyrHisLeuAlaLysHisArgIlePheArgGly
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ValProCysTrpSerPheGlyLeuAsnLysProAspPheLysAlaPheGlyLeuIleGlu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ProlleValAlalleThrGlySerAsnAlaLysSerThrValThrThrLeuValGlyGlu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                GATCGCTATCCGTTTGGTTTACAACAGTATCGTGCACAAAACTGCGCATTTACGAAAAC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              AlaArgGlnValValValAsnArgAlaAspAlaLeuThrArgProLeuIleAlaAspThr
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           GCGAAAGTTTGCGTGGTTAATGCTGATGATGCCTTAACAATGCCGATTCGCGGTGCGGAT
                                                                                                                                                                                                                                                                                                                                                                                                    GICATTATCGGCCTGGGCCTCACCGGGCTTTCCTGCGTGGACTTTTTCCTCGCGGG
                                                                                                                                                                                                                                                                                                                                                                                                                                                 LeuProPheAlaValValAspThrArgGluAsnProProGluLeuAlaThrLeuArgAla
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   11 IleValValGlyLeuGlyLysSerGlyMetSerLeuValArgTyrLeuAlaArgArgGly
                                                                                                                                                                                                                                                                                                                                                                                                                                                                            GTGACGCCGCGCTTATGGATACGCGTATGACACCGCCTGGCCTGGATAAATTA----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              GlnTyrProGln - - - ValGluValArgCysGlyGluLeuAspAlaGluPheLeuCysSer
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        AlaArgGluLeuTyrValSerProGlyLeuSerLeuArgThrProAlaLeuValGlnAla
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        C; 400 G; 300 T; 0 other;
                                                                                                                                                                                                                                             1317
227
58
137
21
                                                                                                                                                                                                                                                                            Conservative:
Mismatches:
Indels:
                                                                                                                                                                                                                                               Length:
Matches:
                                                                                                                                                                                                                                                                                                                          Gaps:
                                                                                                                                                                                                                                                                                                                                                       (1-1317)
                                                                                                                                                                                                                                                                                                                                                       US-09-701-229-2 (1-448) x AAH81460
                                                                                                                                                                                                  Sequence 1317 BP; 294 A; 323
                                                                                                                                                                                                                                                98e-84
                                                                                                                                                                                                                                                            985.50
64.338
51.248
43.618
                                                                                                                                                                     present invention.
                                                                                                                                                                                                                                                                          Percent Similarity:
Best Local Similarity:
Query Match:
                                                                                                                                                                                                                                Alignment Scores:
                                                                                                                                                                                                                                                                                                                                                                                                                 28
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           142
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        20
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      196
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  256
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                110
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             316
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            130
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          376
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     436
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    170
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 190
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              929
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              209
                                                                                                                                                                                                                                                                                                                                                                                                                                               31
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   90
                                                                                                                                                                                                                                                                                                                                                                                                                                                                               88
   ò
                                                                                                                                                                                                                                                                                                                                                                                                                  ద
                                                                                                                                                                                                                                                                                                                                                                                                                                                 ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                               g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           d
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ΩD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       δλ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 qq
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ద
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   οğ
```

```
AsnValGlyAlaAlaLeuAlaAlaIleGluGlyLeuGlyAlaAspIleAspGlyLysLeu 348
                                                              846
                                                                                                                                              996
                                                                                                                                                                                                                                                 384
GluAspGlyGlnLysTrpLeuAlaPheGlnPheAspLysLeuLeuProValGlyGluLeu 268
                                                                                                                        ArgCysGlnTrpValArgGluArgGlnGlyValSerTyrTyrAspAspSerLysAlaThr
                                                                                                                                          CGCTITGAAGTTGTGCTGGAGCATAACGGCGTACGTTGGATTAACGATTCGAAAGCGACC
                                                                                                                                                                                                                                                            CAGCAGGGCGAAACCTGGGCTGCGGGTTAAAGGCGAGAAGTGCTGAATGTGAAAGAGATG
                                        LysIleArgGlyAlaHisAsnTyrSerAsnAlaLeuAlaAlaLeuAlaLeuGlyHisAla
                                                    349 ValLeuLeuAlaGlyGlyAspGlyLysGlyAlaAspPheHisAspLeuArgGluProVal
                                                                                                                                                                                                                                                                                     385 IleAlaGlnAlaLeuGlyAsnAlaValProLeuValArgValAlaThrLeuAspGluAla
                                                                                                                                                                                                                                                                                                                              ValArgGlnAlaAlaGluLeuAlaArgGluGlyAspAlaValLeuLeuSerProAlaCys
                                                                                                                                                                                                                                               AlaArgPheCysArgAla......valValLeuLeuGlyArgAspAlaGlyLeu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Antisense; ds; prokaryotic cellular proliferation gene; antibiotic; antibacterial; drug design.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   coli DNA for cellular proliferation protein #17
                                                                                                                                                                                                                                                                                                                                                                                                                                                                         BP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   21-MAR-2000; 2000US-191078P.
23-MAY-2000; 2000US-206648P.
25-MAY-2000; 2000US-207572P.
23-OCT-2000; 2000US-242578P.
27-MOY-2000; 2000US-253625-
22-DEC-2000; 2000US-25393P.
16-FEB-2001; 2001US-269308P.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                       AAS52295 standard; DNA; 1317
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                21-MAR-2001; 2001WO-US09180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                       1303 AAGGAGTTA 1311
                                                                                                                                                                                                                                                                                                                                                                                                              GluGluLeu 447
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Escherichia coli
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        WO200170955-A2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                13-FEB-2002
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           27-SEP-2001
                                                                                                                                                                                                                                                                                                                                                                                                             445
                                                           787
                                                                                                                        309
                                                                                                                                           907
                                                                                                                                                                329
                                                                                                                                                                                   296
                                                                                                                                                                                                                                               369
                                                                                                                                                                                                                                                                                                                              405
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            AAS52295;
                                                                                                                                                                                                                                                                                                                                                                                                                                                    RESULT 5
AAS52295
                    셤
                                                         g
                                                                                                   ద
                                                                                                                                        q
                                                                                                                                                                                                                         셤
                                                                                                                                                                                                                                                               g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                         à
                                        ò
                                                                               ò
                                                                                                                       δ
                                                                                                                                                               ð
                                                                                                                                                                                  g
                                                                                                                                                                                                     ò
                                                                                                                                                                                                                                              ŏ
                                                                                                                                                                                                                                                                                     à
                                                                                                                                                                                                                                                                                                          셤
                                                                                                                                                                                                                                                                                                                                               g
                                                                                                                                                                                                                                                                                                                                                                     ò
                                                                                                                                                                                                                                                                                                                                                                                         셤
                                                                                                                                                                                                                                                                                                                                                                                                            ò
                                                                                                                                                                                                                                                                                                                                                                                                                                g
                                                                                                                                                                                                                                                                                                                              ò
```

```
The invention relates to antisense inhibitors of genes essential to prokaryotic cellular proliferation, their use in identifying the genes, their use in the discovery of novel antibiotics, the essential genes themselves and the discovery of novel antibiotis, the essential genes themselves and the encoded proteins. The prokaryotes used are Escherichia coli, Staphylococcus aureus, Salmonella typhi, Klebsiella compendina acutions and Enterococcus faecalis. The invention is also useful for the identification of potential new targets for antibiotic development. The antisense nucleic acids can also be used to identify proteins used in proliferation, to express these proteins. The proteins can be used to screen compounds in rational drug discovery compounds nucleic acids which are required for cell proliferation in a wide variety of organisms. The present sequence is also useful to screen compounds in rational drug discovery programmes. The antisense nucleic acids which are required for cell proliferation in a wide variety of organisms. The present sequence encodes an essential prokaryotic cellular proliferation protein.

Note: The sequence data for this patent did not form part
format directly from MIPO at
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            141
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                195
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           255
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     109
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   315
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                129
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          375
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        149
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           69
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              89
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              50
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 87
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          SINDER STATEMENT STREET                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               31 LeuProPheAlaValValAspThrArgGluAsnProProGluLeuAlaThrLeuArgAla
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                142 -----cccgaagccgragaacgccacacacggcagrcrgaargargaargcrgarggcg
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ProIlevalalaileThrGlySerAsnalaLysSerThrValThrThrLeuValGlyGlu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                11 IleValValGlyLeuGlyLysSerGlyMetSerLeuValArgTyrLeuAlaArgArgGly
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         88 GIGACGCCGCGCTTAIGGAIACGCGIATGACACCGCCIGGCTGGCTAAATTA----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         GlnTyrProGln - - - ValGluValArgCysGlyGluLeuAspAlaGluPheLeuCysSer
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        90 AlaalasiysGlyValArgIleSerGlyAspIleAspLeuPheAlaArgGluAlaLysAla
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        130 MetAlaValAlaAlaAspLysArgValAlaValGlyGlyAsnLeuGlyThrProAlaLeu
                                                             Carr GJ;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              70 AlaArgGluLeuTyrValSerProGlyLeuSerLeuArgThrProAlaLeuValGlnAla
                                                                                                                                                                                                                                                     of.
                                                          Trawick JD,
                                                                                                                                                                                                                                                  New polynucleotides for the identification and development antibiotics, comprise sequences of antisense nucleic acids
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   0 other;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          1317
227
58
137
21
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Length:
Matches:
Conservative:
Mismatches:
Indels:
                                                             ď
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   BP; 294 A; 323 C; 400 G; 300 T;
                                                             Wall
                                                                                                                                                                                                                                                                                                                                                Claim 27; Seq ID No 5932; 511pp; English.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      tp.wipo.int/pub/published_pct_sequences
                                                             Zyskind JW,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             (1-1317)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             US-09-701-229-2 (1-448) x AAS52295
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       2.98e-84
985.50
64.338
51.248
(ELIT-) ELITRA PHARM INC.
                                                             KĽ,
                                                             Ohlsen
Xu HH;
                                                                                                                                                    WPI; 2001-611495/70.
P-PSDB; AAU34436.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Percent Similarity:
Best Local Similarity:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Sequence 1317
                                                          Haselbeck R,
Yamamoto RT,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Alignment Scores:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   110
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 28
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         21
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Query Match:
g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           엄
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        õ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ò
```

```
δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                               q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ŏ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ద
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ă
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            à
                                                                                                                                                                                                                                                                                                                                     1020
                                                                                                                                                                                                                                                                                                                                                                                                                                              1182
                                                                                                                                                                                                                                                                                                                                                                1128
                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Argcectrecreecreergrancecessesararserrerecreecesascers 1242
                                                                                                                                                                                                             288
                                                                                                                                                                                                                                                308
                                                                                                                                                                                                                                                                                                  996
                                                                                                                                                                                                                                                                                                                     348
                                                                                                                                                                                                                                                                                                                                                                                                                                                               424
                                                                     208
                                                                                                                        675
                                                                                                                                                                           268
                                                                                                                                                                                             786
                                                                                                                                                                                                                               846
                                                                                                                                                                                                                                                                 906
                                                                                                                                                                                                                                                                                   328
                                                                                                                                                                                                                                                                                                                                                                                                                             404
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  444
                                   189
                                                   555
                                                                                                                                                                                                                                                                                                                                                       ValLeuLeuAlaGlyGlyAspGlyLysGlyAlaAspPheHisAspLeuArgGluProVal 368
                                                                                                                                                                                                                                                                                                                                                                                          384
AspLeuLeuAlaAspAspIleGluLeuTyrValLeuGluLeuSerSerPheGlnLeuGlu
                                  ThrCysAspArgLeuAsnAlaGluValAlaThrValLeuAsnValSerGluAspHisMet
                                            AspargTyrAsp---GlyMetAlaAspTyrHisLeuAlaLysHisArgIlePheArgGly
                                                                                                      AlaArgGlnValValValAsnArgAlaAspAlaLeuThrArgProLeuIleAlaAspThr
                                                                                                                                        229 ValProCysTrpSerPheGlyLeuAsnLysProAspPheLysAlaPheGlyLeuIleGlu
                                                                                                                                                 GluAspGlyGlnLysTrpLeuAlaPheGlnPheAspLysLeuLeuProValGlyGluLeu
                                                                                                                                                                                     ::: ||||::: ||||||| ||||| CAGCAGGGCAAGAAGTGCTGAATGTGAAAGAGATG
                                                                                                                                                                                                             LysIleArgGlyAlaHisAsnTyrSerAsnAlaLeuAlaAlaLeuAlaLeuGlyHisAla
                                                                                                                                                                                                                                                ValGlyLeuProPheAspAlaMetLeuGlyAlaLeuLysAlaPheSerGlyLeuAlaHis
                                                                                                                                                                                                                                                                               ArgCysClnTrpValArgCluArgCluGlyValSerTyrTyrAspAspSerLysAlaThr
                                                                                                                                                                                                                                                                                                CGCTTTGAAGTTGTGCTGGAGCATAACGGCGTACGTTGGATTAACGATTCGAAAGCGACC
                                                                                                                                                                                                                                                                                                                   AsnValGlyAlaAlaLeuAlaAlaIleGluGlyLeuGlyAlaAspIleAspGlyLysLeu
                                                                                                                                                                                                                                                                                                                             AlaArgPheCysArgAla------ValValLeuLeuGlyArgAspAlaGlyLeu
                                                                                                                                                                                                                                                                                                                                                                                                           GCGCGTTACCTGAATGGCGATAACGTACGTCTGTATTGTTTCGGTCGTCGTCGCCGCGCGCAG
                                                                                                                                                                                                                                                                                                                                                                                                                            385 IleAlaGlnAlaLeuGlyAsnAlaValProLeuValArqValAlaThrLeuAspGluAla
                                                                                                                                                                                                                                                                                                                                                                                                                                             CTGGCG---GCGCTACGCCCGGAAGTG---GCAGAACAAACGAAACTATGGAACAGGCG
                                                                                                                                                                                                                                                                                                                                                                                                                                                               ValArgGlnAlaAlaGluLeuAlaArgGluGlyAspAlaValLeuLeuSerProAlaCys
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 AlaSerLeuAspMetPheLysAsnPheGluGluArgGlyArgLeuPheAlaLysAlaVal
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            GATCGCTATCCGTTTTGGTTTACAACAGTATCGTGCAAAAACTGCGCATTTACGAAAAC
                                                                                                                        GCGAAAGTTTGCGTGGTTAATGCTGATGATGCCTTAACAATGCCGATTCGCGGTGCGGAT
                                                                                                                                                                                                                        BP.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        AAF28548 standard; DNA; 96109
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               :::||||||
AAGGAGTTA 1311
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    GluGluLeu 447
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Genomic fragment #35
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           04-APR-2001
                                                                                    929
                                                                                                                        919
                                                                                                                                                                                                                                                289
                                                                                                                                                                                                                                                                847
                                                                                                                                                                                                                                                                                                                                     196
                                                                                                                                                                                                                                                                                                                                                                        1021
                                                                                                                                                                                                                                                                                                                                                                                                                                                               405
150
                 436
                                  170
                                                 96
                                                                                                      209
                                                                                                                                                                          249
                                                                                                                                                                                                             569
                                                                                                                                                                                                                                                                                                  907
                                                                                                                                                                                                                                                                                                                                                      349
                                                                                                                                                                                                                                                                                                                                                                                         369
                                                                                                                                                                                                                                                                                                                                                                                                                                              1129
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 425
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      1303
                                                                    190
                                                                                                                                                                                            727
                                                                                                                                                                                                                              787
                                                                                                                                                                                                                                                                                                                    329
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     445
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          AAF28548
                                                                                                                                                                                                                                                              g
                                                                                                                                                                                                                                                                                               g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        BXXXXX
ò
                g
                                  ö
                                                 a
                                                                   õ
                                                                                    셤
                                                                                                     ò
                                                                                                                     g
                                                                                                                                       ò
                                                                                                                                                       a
                                                                                                                                                                     ŏ
                                                                                                                                                                                        g
                                                                                                                                                                                                            à
                                                                                                                                                                                                                         셤
                                                                                                                                                                                                                                             à
                                                                                                                                                                                                                                                                                ö
                                                                                                                                                                                                                                                                                                                   οy
                                                                                                                                                                                                                                                                                                                                  g
                                                                                                                                                                                                                                                                                                                                                 ö
                                                                                                                                                                                                                                                                                                                                                                    g
                                                                                                                                                                                                                                                                                                                                                                                        õ
                                                                                                                                                                                                                                                                                                                                                                                                      g
                                                                                                                                                                                                                                                                                                                                                                                                                          õ
                                                                                                                                                                                                                                                                                                                                                                                                                                          g
                                                                                                                                                                                                                                                                                                                                                                                                                                                             ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                           a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   셤
```

```
12613 CTGCCCACAGGCGTTCATTGTCATTTTGGCAGCTTGGACAGTGAACTCTTAAGCTCAGCC 12554
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         The present invention relates to a Moraxella catarrhalis genomic library comprising of a combination of 41 nucleic acid molecules (see AAF28514. AAF28554). The library has a number of uses described in the specification e.g. is useful for aidentifying diagnostic and therapeutic compositions. M. catarrhalis (Branhamella catarrhalis) is a large aerobic, gram-negative diplococcus, normally found among the bacterial flora of human upper airways. M. catarrhalis is known to cause acute, localised infections such as oitis media, sinusitis and bronchopulmonary infection and life-threatening, systemic diseases including endocarditis
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            31
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 21
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         70
otitis media; sinusitis;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ValValGlyLeuGlyLysSerGlyMetSerLeuValArgTyrLeuAlaArgArgGlyLeu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 32 ProPheAlaValValAspThrArgGluAsnProProGluLeuAlaThrLeuArgAlaGln
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         TyrProGln----ValGluValArgCysGlyGluLeuAspAlaGluPheLeuCysSerAla
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      AlaLysGlyValArgIleSerGlyAspIleAspLeuPheAlaArgGluAlaLysAla-
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Genomic library for identifying diagnostic and therapeutic compositions, and for identifying virulence factors, regulatory elements and drug targets, comprises Moraxella catarrhalis nucleic
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Sequence 96109 BP; 28783 A; 18910 C; 20341 G; 28075 T; 0 other;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Conservative:
Mismatches:
Indels:
Genomic library; bacteria; human upper airway;
bronchopulmonary; endocarditis; meningitis; ss
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Length:
Matches:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        US-09-701-229-2 (1-448) x AAF28548 (1-96109)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Claim 1; Page 345-368; 545pp; English.
                                                                                                                                                                                                                                                                                                                                                                                        KL;
                                                                                                                                                                                                                                                                                                                                                                                           Berg
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  1.17e-72
889.50
60.43%
45.81%
39.36%
                                                                                                                                                                                                                                  16-JUN-2000; 2000WO-US16649
                                                                                                                                                                                                                                                                                      99US-0140121
                                                                                                                                                                                                                                                                                                                                       (INCY-) INCYTE GENOMICS
                                                                            Moraxella catarrhalis
                                                                                                                                                                                                                                                                                                                                                                                           Patterson
                                                                                                                                                                                                                                                                                                                                                                                                                                            WPI; 2001-041427/05.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Similarity:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       and meningitis.
                                                                                                                          WO200078968-A2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Percent Similarity
Best Local Similar:
                                                                                                                                                                                                                                                                                      18-JUN-1999;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         iqnment Scores:
                                                                                                                                                                              28-DEC-2000
                                                                                                                                                                                                                                                                                                                                                                                           Lagace RE,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             12721
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            12
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         22
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      91
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Query Match:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Мо.:
```

...-----ProlleValAlaIleThrGlySerAsnAlaLysSer

110

121

BP

```
AASS3453 standard; DNA; 1314
                                        AAS53453;
RESULT 7
          4AS53453
                                        12013 ACAAATAGCTTACTTAGCCACCAAACGGCAGATTTTTATTTTGAT-----GATGGT 11960
                                                                                                                                                                                                                                                                                                                                                                                                                                             11782 TGTGAATATATTGATGATATTGATAGCAAGGCATATTTTAATGATTCAAAAGGTACAAAC 11723
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     11602 ATGCAGTGGGTGGATAGTGTGTATTAATCGGTCAAGATGCCCCGATAATTGAGCAAGAT 11543
                                                                                                   11843
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                11542 TTACTCAAAGGTGATGCACATTTGGCATCTAAAATATATCAGGTTGGTACACTTGATCGG 11483
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                12373 ACTGTTACGACATTAGTAGGCGAGATGGCAAAACATGCAGGCATGATTGTTGGTGTCGGC 12314
                                                                                                                                                                                       11783
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   11662 GCATTGATTTTGGGTGGGCTTGGTAAAGGTCAAGATTTTAGTGAGCTGTCAGCATATGTT 11603
                                                           289
                                                                                                                                                                                                                                                                                                                                                                                                                                329
                                                                                                                                                                                                                                                                                                                                                                                                                                                                       348
                                                                                        LeuGluLeuSerSerPheGlnLeuGluThrCysAspArgLeuAsnAlaGluValAlaThr 180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        369 AlaArgPheCysArgAlaValValLeuLeuGlyArgAspAlaGlyLeuIleAlaGlnAla 388
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         404 AlaValArgGInAlaAlaGluLeuAlaArgGluGlyAspAlaValLeuLeuSerProAla 423
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   CysAlaSerLeuAspMetPheLysAsnPheGluGluArgGlyArgLeuPheAlaLysAla 443
                                                                                                                                                                                                                                                          232 TrpSerPheGlyLeuAsn-----LysProAspPheLysAlaPheGlyLeuIleGluGlu
                                                                                                                                                                                                                                 12073 TTAGCCAAGCAATGCTTGACCACACAGAGGGTTGCCCCAAATCACAGTTATCACA
                                                                                                                                                                                                                                                                                                                                                        330 ValGlyAlaAlaLeuAlaAlaIleGluGlyLeuGlyAlaAspIleAsp---GlyLysLeu
       ThrValThrThrLeuValGlyGluMetAlaValAlaAlaAspLysArgValAlaValGly
                                                                                                                                 ValLeuAsnValSerGluAspHisMetAspArgTyrAspGlyMetAlaAspTyrHisLeu
                                                                                                                                                                                                                   ...-----LeuThrArgProLeuIleAlaAspThrValProCys
                                                                                                                                                                                                                                                                                                                                           270 IleargGlyalaHisAsnTyrSerAsnAlaLeuAlaAlaLeuAlaLeuGlyHisAlaVal
                                                                                                                                                                                                                                                                                                                                                                                    290 GlyLeuProPheAspAlaMetLeuGlyAlaLeuLysAlaPheSerGlyLeuAlaHisArg
                                                 GlyAsnLeuGlyThrProAlaLeuAspLeuLeuAla---AspAspIleGluLeuTyrVal
                                                                                                                                                                          201 AlaLysHisArgIlePheArgGlyAlaArgGlnValValValAsnArgAlaAspAla---
                                                                                                                                                                                                                                                                                                    AspGlyGlnLysTrpLeuAlaPheGlnPheAspLysLeuLeuProValGlyGluLeuLys
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Leu-----GlyAsn-----AlaValProLeuValArgValAlaThrLeuAspGlu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              11482 GCAGTATTGGCAGCCAGTCAAAGCACCGCTAGG-----GCTGTGCCTTTTGTCACCTGCT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              349 ValLeuLeuAlaGlyGlyAspGlyLySGlyAlaAspPheHisAspLeuArgGluProVal
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                11368 GTTCACGCTTTAGCC 11354
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            444 ValGluGluLeuAla 448
                                                142
                                                                                        161
                                                                                                                                 181
                                                                                                                                                                                                                                                                                                    250
                                                                                                                                                                                                                                                                                                                                                                                                                              310
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 389
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   424
                                                                                                             12253
                                                                   8
                                                                                                                                                    용
                                                                                                                                                                                         셤
                                                                                                                                                                                                                                     셤
                                                                                                                                                                                                                                                                              a
       ò
                          셤
                                               à
                                                                                        à
                                                                                                            셤
                                                                                                                               ò
                                                                                                                                                                         ò
                                                                                                                                                                                                                 à
                                                                                                                                                                                                                                                          ò
                                                                                                                                                                                                                                                                                                   ò
                                                                                                                                                                                                                                                                                                                      ద
                                                                                                                                                                                                                                                                                                                                         ò
                                                                                                                                                                                                                                                                                                                                                              a
                                                                                                                                                                                                                                                                                                                                                                                    ç
                                                                                                                                                                                                                                                                                                                                                                                                     셤
                                                                                                                                                                                                                                                                                                                                                                                                                           ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ð
```

ò

```
The invention relates to antisense inhibitors of genes essential to prokaryotic cellular proliferation, their use in identifying the genes, their use in the discovery of novel antibiotics, the essential genes themselves and the encoded proteins. The prokaryotes used are Escherichia coli, Staphylococcus aureus, Salmonella typhi, Klebsiella pneumoniae, Pseudomonas aeruginosa and Enterococcus faecalis. The invention is also useful for the identification of potential new targets for antibiotic development. The antisense nucleic acids can also be used to antibiotic acids capable of binding to the express these proteins, and to obtain antibodes capable of binding to the expressed proteins. The proteins can be used to screen compounds in rational drug discovery programmes. The antisense nucleic acid sequence is also useful to screen for homologous nucleic acids which are required for cell proliferation in a wide variety of organisms. The present sequence and proliferation in
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Carr GJ;
                                                   Haemophilus influenzae DNA for cellular proliferation protein #235
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     New polynucleotides for the identification and development of antiblotics, comprise sequences of antisense nucleic acids -
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                essential prokaryotic cellular proliferation protein.
Note: The sequence data for this patent did not form part
of the printed specification, but was obtained in electronic
format directly from WIPO at
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Trawick JD,
                                                                                                       ds; prokaryotic cellular proliferation gene; antibacterial; drug design.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Sequence 1314 BP; 403 A; 214 C; 294 G; 403 T; 0 other;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     1314
206
63
136
38
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Conservative:
Mismatches:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Wall D,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Length:
Matches:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Indels:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Claim 27; Seq ID No 7090; 511pp; English.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ftp.wipo.int/pub/published_pct_sequences
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Gaps:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Ohlsen KL, Zyskind JW,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   US-09-701-229-2 (1-448) x AAS53453 (1-1314)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        2000US-242578P.
2000US-253625P.
2000US-257931P.
2001US-269308P.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               4.13e-74
879.00
60.72%
46.50%
38.89%
                                                                                                                                                                                                                                                                                                                                                                                                                                       2000US-20684BP.
2000US-207727P.
(first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  (ELIT-) ELITRA PHARM INC
                                                                                                                                                                                        Haemophilus influenzae.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Xu HH;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          WPI; 2001-611495/70
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Percent Similarity:
Best Local Similarity:
Query Match:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 P-PSDB; AAU35594
                                                                                                                                                                                                                                               WO200170955-A2
                                                                                                          Antisense; ds;
                                                                                                                                                                                                                                                                                                                                                    21-MAR-2001;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              23-OCT-2000;
27-NOV-2000;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            16-FEB-2001;
                                                                                                                                                                                                                                                                                                                                                                                                             21-MAR-2000;
                                                                                                                                                                                                                                                                                                                                                                                                                                       23-MAY-2000;
26-MAY-2000;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Haselbeck R,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Yamamoto RT,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     22-DEC-2000;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Alignment Scores:
13-FEB-2002
                                                                                                                                       antibiotic;
                                                                                                                                                                                                                                                                                                   27-SEP-2001
```

QY	12 ValValGlyLeuGlyLySSerGlyMetSerLeuValArgTyrLeuAlaArgArgGlyLeu 31
Db	:::::
Οy	32 PropheAlaValValValAspThrArgGluAsnProProGluLeuAlaThrLeuArgAlaGln 51
Db	91 AATATTCGTGTGATTGATACTCGAAAAATCCTACTGGTATTGATAAACTT 141
Qy	H
Ор	142CCTCAAAATATCCCTCTTCATACTGGTAGTTTAAATCAGGAATGGTTACTTGAAAGC 198
VQ 4	ArgGluLeuTyrValSerProGlyLeuSerLeuArgThrProAlaLeuValGlnAlaAla
	GATATGATTGTTATTAGCCCAGGGCTTGCGGTAAAACACCAGAAATTCAAACCGCACTT 25
Qy Db	91 AlaLysGlyValargIleSerGlyAspIleAspLeuPheAlaArgGluAlaLysAlaPro 110
Qy	111 ilevalAlaileThrGlySerAsnAlaLysSerThrValThrThrLeuValGlyGluMet 130
pp	319 ATTGTGGGGATTACAGGTTCAAATGGTAAAAGTACCGTAACTTATATTATGAAATG 378
Qy	131 AlaValAlaAlaAspLysArgValAlaValGlyGlyAsnLeuGlyThrProAlaLeuAsp 150
qq	379 GCGAAAGCTGCTGGTGTGAAAGTTGGTATGGGAAATATTGGGATTCCCGCTTTGTCA 438
Οy	151 LeuLeuAlaAspAspIleGluLeuTyrValLeuGluLeuSerSerPheGlnLeuGluThr 170
QQ	439 TIGITGAATGAAGAITGGAACTITTAIGIACTAGAGCTITCTAGTTTTCAGCITGAGACA 498
Oy	171 CysAspArgieuAsnAlaGluValAlaThrValLeuAsnValSerGluAspHisMetAsp 190
QQ	499 ACTIATAGCITAAAAGCIGCGGCAGCGACTGTCTICAACGTGACTGACTGAAGATCATATGGAT 558
Οy	191 ArgTyrAspGlyMetAlaAspTyrHisLeuAlaLysHisArgIlePheArgGlyAlaArg 210
Db	559 CGCTATATGGATTTAGAAGATTATCGCCAAGCAAATTACGCATTATCATAATGCTAAA 618
οy	211 GlnValValValAsnArgAlaAspAlaLeuThrArgProLeuIleAla 226
οp	619 GTAGGTGTGTTGAACAATGAAGATAGGCTGACTTTTGGGGAAAACGAAAATCAAGCGAAA 678
QY	227 AspThrValProCysTrpSerPheGlyLeuAsnLysProAspPheLysAlaPheGlyLeu 246
QQ	679 CATACCGTTTCTTTTGCGGAAAATAGTGCGGATTATTGGCTA 720
QY	247 IleGluGluAspGlyGlnLysTrpLeuAlaPheGlnPheAspLysLeuLeuProValGly 266
DP	721 AAAACTGAAAATGGCAAGCAATATTAATGGTAAAAGATGAAGTGATTTTACCTTGTGAA 780
Qy	267 GluLeuLysIleArgGlyAlaHisAsnTyrSerAsnAlaLeuAlaAlaLeuGly 286
Db	781 GAAGCTACATTGGTTGGTCGCCATAATTATGAACATTTTGGCAGCAACAATGGCA 840
٥y	287 HisalavalGlyLeuProPheAspalaMetLeuGlyAlateuLysAlaPheSerGlyLeu 306
Db	841 CAAGCTATAAGTTTAAATTTAGATTCAATTCGTACCGCACTTCGTCATTTCAAAGGGTTA 900
γo	307 AlaHisArgCysGlnTrpValArgGluArgGlnGlyValSerTyrTyrTyrAspAspSerLys 326
QQ	901 GATCATCGTTTTÇAATTAGTGCATCAAGCTAATGGCATTCGTTGGATTAATGACTCTAAA 960
Οy	327 AlaThrAsnValGlyAlaAlaLeuAlaAlaIleGluGlyLeuGlyAlaAspIleAspGly 346
qa	961 GCAACAARGIGGGGGGAGTACAGTIGCTGCATIGGCTGGGCTTTATATIGAGGGT 1014
Qy	347 LysLeuValLeuLeuAlaGlyGlyAspGlyLysGlyAlaAspPheHisAspLeuArgGlu 366
qq	1015 AATTGCATTTGTTGCTAGGGGACGGAAAAGGGGCCTGATTTTCAGAATTAGCTGAA 1074

```
----TTTGGTCGAGAT 1119
                                                                                         1159 TTCGATACAATGGAACAAGGGATAGAATTTTTACGCCCAACATTGCAAAGCGGAGATATG 1218
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       This sequence represents the complete genome sequence of the bacterium Haemophilus influenzae strain Rd. The invention relates to a computer readable medium (CRM) having recorded upon it the complete H.influenzae nucleotide sequence (I), a representative fragment of (I) or a nucleotide sequence I east 99% identical to (I). By providing the full-length genomic sequence in a computer readable form, it is possible to identify commercially important nucleic acid fragments and expression modulating fragments (EMFs) of the Haemophilus genome. The EMFs can be used to regulate the expression of a nucleic acid molecule. Vectors and altered organisms comprising the predicted ORFS can be used to produce any of the polypeptide fragments of the H. influenzae Rd genome.
367 ProvalAlaArg------PheCysArgAlaValValLeuLeuGlyArgAsp 381
                                                                    382 AlaGlyLeuIleAlaGlnAlaLeuGlyAsnAlaValProLeuValArgValAlaThrLeu 401
                                                                                                                                      402 AspGluAlaValArgGlnAlaAlaGluLeuAlaArg------GluGlyAspAla 417
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Haemophilus influenzae Rd genome recorded on computer readable medium – useful for identifying commercially important nucleic acid fragments by homology searching
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Genome; bacterium; Haemophilus influenzae; computer readable medium; expression modulating fragment; regulation; gene expression; vector; organism; open reading frame; ORF; ds.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Smith HO, Venter JC, White O;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Haemophilus influenzae complete genome sequence.
                              1075 TTAATTAATCAACCACACATTATTTGTTATTGT--
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Claim 1; Page 77.2-77.1091; 1291pp; English.
                                                                                                                                                                                                                                                                                                                                                                                 AAT42063 standard; DNA; 1830121 BP.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              95US-0487429.
95US-0426787.
95US-0476102.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      (HUMA-) HUMAN GENOME SCI INC.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               96WO-US05320
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Adams MD, Fleischmann RD,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      SNINGO NINU (OLYU)
                                                                                                                                                                                                                                                                                                                                                                                                                                                   14-SEP-1999 (first entry)
                                                                                                                                                                                                                                                                                                             1279 GAAGAATTT 1287
                                                                                                                                                                                                                                                                            438 ArgLeuPhe 440
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Haemophilus influenzae
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      WPI; 1996-485782/48.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              07-JUN-1995;
21-APR-1995;
07-JUN-1995;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           WO9633276-A1.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               22-APR-1996;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            24-0CT-1996,
                                                                                                                                                                                                                                                                                                                                                                                                                   AAT42063;
                                                                                                                                                                                                                                                                                                                                                                    AAT42063
                                                                                                                                                                                                                                                                                                                                                                                                   δ
                                                                                                                                                                                                                                          g
                                                                                                                                                                                                                                                                                                             g
                                                                     ð
                                                                                                    g
                                                                                                                                                                        ВÞ
                                                                                                                                                                                                          δ
                                                                                                                                                                                                                                                                            δ
```

Sequence 1830121 BP; 567399 A; 350615 C; 347389 G; 564036 T; 682 other;

us-09-701-229-2.p2n.rng

327 AlaThrAsnValGlyAlaAlaLeuAlaAlaIleGluGlyLéuGlyAlaAspIleAspGly 346

8 8 8 8	a (	ទី គី	8 B	í	S ====================================	8 A	- 6	7 A	K & H	׫	12521	0 × ×	××	* O × 1	<u>а</u> ×	. c. × c.	×	×	× a ×	<b>;</b> ₽, >	× 10. ×	866		Öΰ	000	88	88
		1 203221		1203272	70 1203329		1203389	10 203449	0	203509	50 203569	V	203629	0	203689	210 1203749	92	203809	16	203851	99	203911	5	1203971	306 1204031	326	1204091
.121		ValValGlyLeuGlyLysSerGlyMetSerLeuValArgTyrLeuAlaArgArgGlyLeu 31 :::::           :::		1 1	ProGlnValGluValargCysGlyGluLeuAspAlaGluPheLeuCysSerAla 70	ArgGluLeuTyrValSerProGlyLeuSerLeuArgThrProAlaLeuValGlnAlaAla 90		AlaLysGlyValargIleSerGlyAspIleAspLeuPheAlaArgGluAlaLysAlaPro 11.	-	Н	AlaValAlaAlaAspLysArgValAlaValGlyGlyAsnLeuGlyThrProAlaLeuAsp 1: 		П	CysAspArgLeuAsnAlaCluValAlaThrValLeuAsnValSerGluAspHisMetAsp 1:	-	ArgTyrAspGlyMetAlaAspTyrHisLeuAlaLysHisArgIlePheArgGlyAlaArg 2: 	-ArgProLeuIleAla 22		AspThrValProCysTrpSerPheGlyLeuAsnLysProAspPheLysAlaPheGlyLeu 24	-	<pre>1leGluGluAspGlyGlnLysTrpLeuAlaPheGlnPheAspLysLeuLeuFroValGly 26</pre>	artitaccitgram 120	GluLeuLysIleArgGlyAlaHisAsnTyrSerAsnAlaLeuAlaLaLeuAlaLeuGly 28		<pre>HisAlaValGlyLeuProPheAspAlaMetLeuGlyAlaLeuLysAlaPheSerGlyLeu 3(</pre>	AlaHisArgCysGlnTrpValArgGluArgGlnGlyValSerTyrTyrAspAspSerLys 3	
1: 18301 ss: 206 vative: 63 cches: 136 i: 10	•	euValArgTyrLe 	ProPheAlaValValAspThrArgGluAsnProProGluLeuAlaThrLeuArgAl	CTACTGGTATTGA	luLeuAspAlaGlu    :::  GTTTAATCAGGA	euArgThrProAla	TAAAACACCAGA	SpleuPhealaard ::       :aattatrcrgccg	erThrvalThrTh	GTACCGTAACTAC	:lyGlyAsnLeuGl;             ;::   :GCGGAAATATTGG	euGluLeuSerSel	TAGAGCTTTCTAG	alLeuAsnValSe	TCTTGAACGTGAC	latysHisargile         CaaaattacGCat	hr	  CTTTTGGGGAAAA(	snLysProAspPhe	ATAGTGCGGAT	heGlnPheAspLys	TAAAAGATGAAGT	erAsnAlaLeuAla	TGAACATTTGGC	euGlyAlaLeuLys       :::  GTACCGCACTTCG1	lnglyValSerTyn	ATGGCATTCGTTGC
Length: Matches: Conservat; Mismatches Indels: Gaps:	63 (1-1830121	SerGlyMetSerL :::   :::    ACAGGTCTTTCTT	ThrArgGluAsnP 	ACTCGAAAAAATC	ValArgCysGlyG  -::  CTTCATACTGGTA	ProGlyLeuSerL	CCAGGGCTTGCGG	SerGlyAspIleA          ATCGCCATATTG	SerAsnAlaLysS	TCAAATGGTAAAA	ArgvalalavalG :::    :AAAGTTGGTATGG	GluLeuTyrVall	GAACTTTATGTAC	GluvalAlaThrv	GCGGCAGCGACTG	AspTyrHisLeuA           GATTATCGCCAAG	AlaAspAlaLeuT	  GAAGATAGGCTGA	SerPheGlyLeuA	TCTTTGCGGAAA	LysTrpLeuAlaP	CAATATTTAATGG	AlaHisAsnTyrS	CGCCATAATTATA	Pheaspalametr    ::::: TTAGATTCAATTC	ValArgGluArgG	 GTGCATCAAGCTA
5.64e-70 879.00 60.72% lty: 46.50% 17	-448) x AAT42063	alGlyLeuGlyLys ::           rcGGGCTTGGCAAA	neAlaValValAsp    :::	TCGTGTGATTGAT	TyrProGlnValGlu        CCTCAAATATCCCT	luLeuTyrValSer	'GATTGTTATTAGO	/sGlyValArgile         :GGGAGTGGAAGTA	lAlailerhrGly	'GGGGATTACAGGT	alAlaAlaAspLys        \AGCTGCTGGTGTG	euAlaAspAspIle	'gaatgaagattgi	spargreuasnala	vi agci i aaaagci	rraspglymetala 	GlnValValValAsnArgAlaAspAlaLeuThr	:::    GTGTTGAACAAT	rValProCysTrp	CGTT	uGluAspGlyGln	TGAAATGGCAAG	uLysileArgGly	TACATTGGTTGGT	aValGlyLeuPro  :::   ::: TATAGGTATTAAT	sArgCysGlnTrp	  TCGTTTTCAATTA
nment Scores: . No.: ent Similarity: Local Similarity Y Match:	01-229-2 (1	12 Valve	3.2	203222 AATA1	52 TyrP1 11 203273CC	71	203330	91 AlaLy 203390 AAAGO	111	203450	131	151	203570 TTGT1	171	203630	191	211 GlnVe	203750	227 AspT	203810	247 IleG]	203852	267	218502	287 H1SA1     1203972 CAAGC	307 AlaHi	  1204032 GATCA
Alignment Sr Pred. No.: Score: Percent Sim Best Local ( Query Match DB:	L-60-SD	Oy 1	δλ	d T	Qy Db 1		90	Qy Db 1	•	H	Oy Db 1		යි	yo 4	4	Oy Db 1	δ	Db 1	Qy	Db 1	δ	Db 1	δ <del>ξ</del>		Oy Dp	Οy	Db 1

```
401
                                                                                          347 LysLeuValLeuLeuAlaGlyGlyAspGlyLysGlyAlaAspPheH1sAspLeuArgGlu 366
                                                                                                                                                                                                                               367 ProValAlaArg------PheCysArgAlaValValLeuLeuGlyArgAsp 381
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              402 AspGluAlaValArgGlnAlaAlaGluLeuAlaArg------GluGlyAspAla 417
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          The present invention describes a gene (I) derived from Buchnera sp. containing the DNA (a) or (b), (a) has a fully defined base pair sequence selected from a table of sequences found in the Buchnera sp. genomic DNA of ABA92797 given in the specification or is a DNA selected from complementary DNA sequences, and (b) is a DNA which hybridises with the DNA (a) and encodes a protein. Also described are: (1) a recombinant vector (II) containing (I); (2) a transformant (III) containing (II); (3) a genomic DNA of Buchnera sp. containing the sequence given in ABA92787; (4) a plasmid derived from Buchnera sp. containing DNA (c) or (d), (c) is a DNA containing a fully defined sequence given in ABA92789 and (d) is a plasmid which hybridises with a DNN; and (5) a method for the preparation of a protein in which (III) is cultured and the expression protein of the objective protein is cojlected from the
                                                                                                                                                                                                                                                                                                                                                                 382 AlaGlyLeuIleAlaGlnAlaLeuGlyAsnAlaValProLeuValArgValAlaThrLeu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Buchnera; cockroach-symbiotic bacterium; cockroach extermination; circular; ds.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        A genomic DNA of cockroach-symbiotic bacterium
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Claim 1; Page 16-230; 237pp; Japanese.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                RESULT 9
ABA927875
ID ABA927875 standard; DNA; 640681 BP.
XX
AC ABA92787;
XX
DT 27-MAR-2002 (first entry)
XX
DE Buchnera; cockroach-symbiotic bacterian elementary as a cockroach-symbiotic bacterian elementary as a buchnera sp.
XX
Buchnera; cockroach-symbiotic bacterian elementary as a buchnera sp.
XX
Suchnera sp.
XX
Suchnera sp.
XX
O7-APR-2000; 2000JP-0107160.
XX
PP
C3-CCT-2001.
XX
PP
C3-CCT-2001.
XX
PP
C7-APR-2000; 2000JP-0107160.
XX
PP
C7-APR-2000; 2000JP-0107160.
XX
PP
C7-APR-2000; 2000JP-0107160.
XX
PP
C8-CCT-2001.
XX
PP
C9-CCT-2001.
XX
C1aim 1; Page 16-230; 237pp; Japanesian elementary DNA of sequences, and encodes a protein. A cockroach-symbiotic elementary DNA of Buchnera sp. cocception (1); (2) a tr.
CC G13 a genomic DNA of Buchnera sp. cocception (2); (2) a tr.
CC (3) a genomic DNA of Buchnera sp. cocception (2); (2) a genomic DNA of Buchnera sp. cocception (3) a genomic DNA of Buchnera sp. cocception (4); (2) is a DNA containing a fully ccception of the object the expression protein of the object cocception of the cocception of the object cocception of the 
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Buchnera sp. genomic DNA SEQ ID NO:1.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      1204410 GAAGAATTT 1204418
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         438 ArgLeuPhe 440
                     ð
                                                                                                                                                   æ
                                                                                                                                                                                                                                                                                                ð
                                                                                                                                                                                                                                                                                                                                                                                                                               a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ⋩
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ð
                                                                                             ⋧
                                                                                                                                                                                                                            ⋩
                                                                                                                                                                                                                                                                                                                                                                     ⋩
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ⋩
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ⋩
```

```
AlaValGlyLeuProPheAspAlaMetLeuGlyAlaLeuLysAlaPheSerGlyLeuAla 307
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Petersen J, Pizza M,
Tettelin H, Venter JC;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Neisseria meningitidis
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          WPI; 2000-062150/05.
P-PSDB; AAY74413.
                                                                                                                                                                                                                                                                                                                                                              standard;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               31-JUL-1998;
02-SEP-1998;
02-SEP-1998;
09-OCT-1998;
                                                                                                                                                                                                                                                                                                                                                                                                     21-MAR-2000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          W09957280-A2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  30-APR-1999;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              11-NOV-11999.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          09-OCT-1998
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               25-FEB-1999
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Fraser C,
                                                                                       328
                                                                                                                               348
                                                                                                                                                                       368
                                                                                                                                                                                                                                                                                                                                                     175/c
AAZ53175
    288
                                             308
                                                                                                                                                                                                               388
                                                                                                                                                  240270
                                                                                                                                                                                                                                                        408
                                                                                                                                                                                                                                                                                                                                                                                 AAZ53175;
                                                                                                                                                                                                                                                                                                                                         RESULT
                                                                                                                                                                                                                                 g
                                                                                                                                                                                                                                                                           g
                                                                                                                                                                                                                                                                                                                                                                        g
                                             δ
                                                                qq
                                                                                    QΥ
                                                                                                         셤
                                                                                                                              Qγ
                                                                                                                                                 g
                                                                                                                                                                      δ
                                                                                                                                                                                          g
                                                                                                                                                                                                               ŏ
                                                                                                                                                                                                                                                       δ
                                                                                                                                                                                                                                                                                                δ
                                                                                                                                                                                                                                                                                                                     셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    240504 ATATTATATGGATATCATAATTACAATAATAATAATTAGTCTCTTTAGCTATTCAGAT 240445
                                                                                                                                                                                            241035 CGTTTGCTAGGTATTGAGATTATTAGTGATATTGAACTATTTTCTAGAGAAGTGACCTGT 240976
                                                                                                                                                                                                                                                                                                                                                                                                     240915 ATTGCAAAAAAAACAGGATATAAAGCTTTTCTAGGTGGTAATATAGGTGTTCCCGTACTA 240856
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      :::|||||| :::||||||
840735 AATCGATACCAACAATATAAAAACACTAAATTGTCTGTTTATAATCAA 240676
                                                                                                                                                                                                                                             241150
                                                                                                                                                                                                                                                                                     241096
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        240736
                                                                                                                                                                                                                                                                                                                                                                                                                                    149
                                                                                                                                                                                                                                                                                                                                                 AlaAlaLysGlyValArgIleSerGlyAspIleAspLeuPheAlaArgGluAlaLysAla 109
                                                                                                                                                                                                                                                                                                                                                                                                                                                                         AspLeuLeuAlaAspAspIleGluLeuTyrValLeuGluLeuSerSerPheGlnLeuGlu 169
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ThrCysAspArgLeuAsnAlaGluValAlaThrValLeuAsnValSerGluAspHisMet 189
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             AspArgTyr---AspGlyMetAlaAspTyrHisLeuAlaLysHisArgIlePheArgGly 208
                                                                                                                                                                                                                         20
resultant culture. The DNA is useful for developing agricultural chemicals for exterminating cockroaches. The present sequence represents the specifically claimed Buchnera sp. genomic DNA sequence, from the present invention.
                                                                                                                                                                                                                                                                69
                                                                                                                                                                                                                                                                                                          8
                                                                                                                                                                                                                                                                            241149 -----CCTCAAAATATTGAATATAGTTTAGGAAGTTTAGACCATCAGTGGATTCTAGAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        IleValValGlyLeuGlyLysSerGlyMetSerLeuValArgTyrLeuAlaArgArgGly
                                                                                                                                                                                                                        LeuProPheAlaValValAspThrArgGluAsnProProGluLeuAlaThrLeuArgAla
                                                                                                                                                                                                                                     GlnTyrProGln---ValGluValArgCysGlyGluLeuAspAlaGluPheLeuCysSer
                                                                                                                                                                                                                                                                                                         ProlleValAlalleThrGlySerAsnAlaLysSerThrValThrThrLeuValGlyGlu
                                                                                                                                                                                                                                                                                                                                                                                                                                  MetalaValAlaAlaAspLysArgValAlaValGlyGlyAsnLeuGlyThrProAlaLeu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              AlaArgGlnValValValAsnArgAlaAspAlaLeuThrArgProLeuIleAlaAspThr
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       240675 GCAGAAATTTGTATTAACTCTAATGATAAGATAGAAAAAAGTCTTATTCATAGTAAG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             229 ValProCysTrp---SerPheGlyLeuAsnLysProAspPheLysAlaPheGlyLeuIle
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       GluGluAspGlyGlnLysTrpLeuAlaPheGlnPheAspLysLeuLeuProValGlyGlu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               LeuLysIleArgGlyAlaHisAsnTyrSerAsnAlaLeuAlaAlaLeuAlaLeuGlyHis
                                                       G; 234580 T; 0 other;
                                                                                      640681
151
102
173
14
                                                                                   Length:
Matches:
Conservative:
Mismatches:
Indels:
                                                      Sequence 640681 BP; 237522 A; 83822 C; 84757
                                                                                                                                                            (1-640681)
                                                                                                                                                          US-09-701-229-2 (1-448) x ABA92787
                                                                             4.74e-55
716.00
57.50%
34.32%
31.68%
                                                                                                                    Best Local Similarity:
                                                                                                         Percent Similarity:
                                                                          Alignment Scores:
                                                                                                                                                                                11
                                                                                                                                                                                                                        31
                                                                                                                                                                                                                                                                21
                                                                                                                                                                                                                                                                                                         70
                                                                                                                                                                                                                                                                                                                                                 90
                                                                                                                                                                                                                                                                                                                                                                                          110
                                                                                                                                                                                                                                                                                                                                                                                                                                  130
                                                                                                                                                                                                                                                                                                                                                                                                                                                                          150
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  170
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       248
                                                                                                                                                                                                                                            241203
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    209
                                                                                                                             Query Match
DB:
                                                                                       .. No. .
   88888
                                                                                                                                                                                                  g
                                                                                                                                                                                                                                           合
                                                                                                                                                                                                                                                                                g
                                                                                                                                                                                                                                                                                                       δ
                                                                                                                                                                                                                                                                                                                          g
                                                                                                                                                                                                                                                                                                                                                                 g
                                                                                                                                                                                                                                                                                                                                                                                                                            δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                  qq
                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             g
                                                                                                                                                                                ö
                                                                                                                                                                                                                       à
                                                                                                                                                                                                                                                               à
                                                                                                                                                                                                                                                                                                                                               Ω
                                                                                                                                                                                                                                                                                                                                                                                        ă
                                                                                                                                                                                                                                                                                                                                                                                                          q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ŏ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           δý
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        QQ
```

```
240036 GGTCAATTTTCTAACTTTGAAGAGAGGTAATCTTTTTATAAAATTAATAAAGGAAATA 239977
                                                                                                                240325
                                                                                                                                                                                                                             240271
                                                                                                                                                                                                                                                                                                                                        ATAAGATTATTATTAGGCGGCGATAGTAAATCTGCAAATTTTAATATATAAAAAATATT 240211
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ::: |||| :::||||||
240150 atatgtgaaaaa-----aaatctatttatgttgaaaatttaaaaaaagcagtaattta 240097
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           240096 ATTICAAAACAAGTCAAATCAGGTGATACCGTTCTTTTGTCTCCTGGGTGCAGCAGCTTA 240037
                                                                                                                                                                        ThrasnValGlyAlaAlaLeuAlaAlaIleGluGlyLeuGlyAlaAspIleAspGlyLys 347
                                                                                                                                                                                                                                                                                     LeuValLeuLeuAlaGlyGlyAspGlyLysGlyAlaAspPheHisAspLeuArgGluPro 367
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                AlaLeuGlyAsnAlaValProLeuValArgValAlaThrLeuAspGluAlaValArgGln 407
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              427
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           AspMetPheLysAsnPheGluGluArgGlyArgLeuPheAlaLysAlaValGluGluLeu 447
                                                                                                 240384 CATCGATTTCAAATAAAAAATGAAAAAGGAGTACGTTGGATAAACGATTTCTAAAICC
                                                                                                                                                                                                         Neisseria meningitidis; Neisseria gonorrheae; antigen; vaccine; antigenic; diagnosis; immunogenic; infection; meningitis; septicaemia; antibacterial; gene therapy; ds.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Mora M;
Scarselli M;
                                                                                                                                                                                                                                                                                                                                                                                                ValAlaArgPheCysArgAlaValValLeuLeuGlyArgAspAlaGlyLeuIleAlaGln
                                                                                                                                                                                                                                                                                                                                                                                                                                                        240210 TITAGAACTTTAAAAATAAAAATTTACTGTTTTGGAAGAGATGGCATTAAATTGTCAAAA
240444 GCAATGCAATTCCCTAGAAATGACGCAATAAATGTACTTAAAAGTTTCTCGAATTTACCA
                                                        HisArgCysGlnTrpValArgGluArgGlnGlyValSerTyrTyrAspAspSerLysAla
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           AlaAlaGluLeuAlaArgGluGlyAspAlaValLeuLeuSerProAlaCysAlaSerLeu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Neisseria meningitidis ORF 090 partial DNA sequence SEQ ID NO:301
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Masignani V,
Scalato E, S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ы́ ю́
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Hickey
Ratti
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Galeotti C, Grandi G,
, Pizza M, Rappuoli R,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    BP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 DNA; 1380
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 98US-0083758.
98US-0094869.
98US-0098994.
98US-0099062.
98US-0103749.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 99WO-US09346
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               98US-0103794
98US-0103796
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       99US-0121528
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               (CHIR ) CHIRON CORP. (GENO-) INST GENOMIC RES.
```

Fri

```
WO200022430-A2.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 09-OCT-1998;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        04-DEC-2000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               20-APR-2000
                                                                                 242
                                                                                                                                                                                                               540
                                                                                                                                                                                                                                                                                                                                                                      360
                                                                                                                                   260
                                                                                                                                                            909
                                                                                                                                                                                                                                                                 480
                                                                                                                                                                                                                                                                                           315
                                                                                                                                                                                                                                                                                                                     420
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  72
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               AAA81479;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        AAA81479,
                             à
                                                      엺
                                                                              à
                                                                                                     8
                                                                                                                                  ò
                                                                                                                                                       g
                                                                                                                                                                               ŏ
                                                                                                                                                                                                           g
                                                                                                                                                                                                                                        à
                                                                                                                                                                                                                                                             g
                                                                                                                                                                                                                                                                                           ò
                                                                                                                                                                                                                                                                                                                  g
                                                                                                                                                                                                                                                                                                                                               ò
                                                                                                                                                                                                                                                                                                                                                                   셤
                                                                                                                                                                                                                                                                                                                                                                                                ò
                                                                                                                                                                                                                                                                                                                                                                                                                         셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                  δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                          g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ŏ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       £
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   represent novel Neisseria menigitis and N. gonorrheae polynucleotides and polypeptides. AA25457 to AA254576 and AA254616 to AA255473 represent propertides. AA25457 to AA254576 and AA254616 to AA255473 represent polypeptides. AA25457 to AA254576 and AA254616 to AA255473 represent polypeptides in the polypeptides, the polynucleotides, antibodies and compositions of the invention can be used as vaccines, as diagnostic reagents, and as manufacture of medicaments for treating or preventing infection due to Neisserial bacteria (e.g. meningitis and septicaemia), to detect the presence of Neisseria bacteria, or to raise antibodies. They may also be used to screen for agonists or antagonists, which may themselves have use as antibacterial agents. The polynucleotides of the invention may also be used in gene therapy protocols.
                                                                                                                                                                                                                                                                                                                                                                                                                         1221 ATGITIGACGGGIIGGIGITITACACGGGCCGICIGAAAGAIGCGCIGGACAACGGIIIC 1162
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1042
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             105
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   LeuvalGlyGluMetAlaValAlaAlaAspLysArgValAlaValGlyGlyAsnLeuGly 145
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ThrProAlaLeuAspLeu------LeuAlaAspAspIleGluLeuTyrValLeu 161
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      868
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           GluLeuSerSerPheGlnLeuGluThrCysAspArgLeuAsnAlaGluValAlaThrVal 181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        11 IleValValGlyLeuGlyLysSerGlyMetSerLeuValArgTyrLeuAlaArgArgGly 30
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              LeuAsnValSerGluAspHisMetAspArgTyrAspGlyMetAlaAspTyrHisLeuAla 201
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                LysHisArgIlePheArgGlyAlaArgGlnValValValAsnArgAlaAspAlaLeuThr 221
||| :::||||||||||||
                                                                                                                                                                                                                                                                                                                                                                                                                                                          31 LeuProPheAlaValValAspThrArgGluAsnProProGluLeuAlaThrLeuArgAla
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ACGCCGGTTTTGGAGGCGGAATGGCAGCGCGAAGGCAAAAAGGCGGACGTGTGGGTGTTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    1281 GCGGAGGTTGCTGCGTATGATGCGGAGCTGAAGCCGGAACGCGTGTCGCAAATCGGTAAG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            GlnTyrProGlnValGluValArgCysGlyGluLeuAspAlaGluPheLeuCysSerAla
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                91 AlaLysGlyValArgIleSerGlyAspIleAspLeuPheAla------Arg
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             71 ArgGluLeuTyrValSerProGlyLeuSerLeuArgThrProAlaLeuValGlnAlaAla
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           to AA254536, AA254577 to AA254615, and AAY74253 to AAY75941
    to be useful antigens for
                                                                                                                                                                                                                                                Sequence 1380 BP; 292 A; 424 C; 346 G; 318 T; 0 other;
                                                                                                                                                                                                                                                                                        1380
173
70
177
34
                                                                                                                                                                                                                                                                                       Length:
Matches:
Conservative:
Mismatches:
Indels:
Gaps:
  predicted
                                                                                                                                                                                                                                                                                                                                                                               US-09-701-229-2 (1-448) x AAZ53175 (1-1380)
                                     Claim 7; Page 286; 1453pp; English
Novel Neisserial polypeptides vaccines and diagnostics
                                                                                                                                                                                                                                                                              2.05e-57
704.00
53.528
38.118
                                                                                                                                                                                                                                                                                                              Percent Similarity:
Best Local Similarity:
                                                                                                                                                                                                                                                                         Alignment Scores:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            51
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      126
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                987
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            162
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          146
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  927
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             182
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                202
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   867
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       807
                                                                                                                                                                                                                                                                                                                                         Query Match
셤
```

ò

ò ద à 윱 ò g ద

à

셤

ò 셤 ð g õ 셤 õ 음

ô

```
259
                                                                                                        658
                                                                                                                                                                                                                                                                                                                   541
  691
                                                                                                                                                                                                              601
                                                                                                                                                                                                                                                               274
                                                                                                                                                                                                                                                                                                                                                                  275 AsnTyrSerAsnAlaLeuAlaAlaLeuAlaLeuGlyHisAlaValGlyLeuProPheAsp 294
                                                                                                                                                                                                                                                                                                                                                                                                                                                                             314
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             313
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       393
                                                                                                                                                                                                                                                                                                                                                                                                                         481
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            334
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       361
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            354
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               AspGlyLysGlyAlaAspPheHisAspLeuArgGluProValAlaArgPheCysArgAla 374
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  312 ATGGGTAAAGGCAGGACTTCACGCCCTGCGCGATGCACTGGTAGGCAAGGCAAAAGGC 253
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             413
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        414 GluGlyAspAlaValLeuLeuSerProAlaCysAlaSerLeuAspMetPheLysAsnPhe 433
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        GIGITCITGATIGGIGICGCGCGCAAATCCGCCGCGATTIGGACGGCTGCGGCTTG 193
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    73
                                                                                     GCCGCGATTGCCCGTTTG------CAAAATCCGCTTTCGTGATTTTGGGCGGC
747 AAAGCCAAGATTTTCCGTGGCGACGCGTGCAGGTTTTGAATGCGGACGATGCGTTC---
                                                                                                                                                                                                                                                                                                      CTGAAACAAGGCAATGAAGATTTGATTGTCACGCAAGACATTCCGTTGCAAGGTCTGCAC
                                                                                                                                                                                                                                                                                                                                                                                                   295 AlaMetLeuGlyAlaLeuLysAlaPheSerGlyLeuAlaHisArgCysGlnTrpValArg
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   GluArgGlnGlyValSerTyrTyrAspAspSerLysAlaThrAsnValGlyAlaAlaLeu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Neisseria meningitidis; Neisseria gonorrheae; genome; immunogenic; antigen; vaccine; diagnosis; infection; antibacterial; identification; Meningococcus B; MenB; ds.
                                                 ArgProLeuIleAlaAspThrValProCysTrpSerPheGlyLeuAsnLysProAspPhe
                                                                                                                                                         LysAlaPheGlyLeuIleGluGluAspGlyGlnLysTrpLeuAlaPheGlnPhe----
                                                                                                                                                                                                           AAATGGTTTTCGTTG----GAACACGAAGCTGATTTCTGGTTGGAACGCGAGACAGGCCGC
                                                                                                                                                                                                                                                                  -------AspLysLeuLeuProValGlyGluLeuLysIleArgGlyAlaH1s
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     GAGAAAAACGGCGTGGTGTTTATCGACGACAGCAAGGCACGAATGTCGGCGCGCGACTGCC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         AlaAlaIleGluGlyLeuGlyAlaAspIleAspGlyLysLeuValLeuLeuAlaGlyGly
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ValValLeuLeuGlyArgAspAlaGlyLeuIleAlaGlnAlaLeu---GlyAsnAlaVal
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          394 ProLeuValArgValAlaThrLeuAspGluAlaValArgGlnAlaAlaGluLeuAlaArg
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           132 GCAGGCGATATTGTGTTGCTCAGCCCCGCCTGCGCGAGCTTTGATATGTTCAAAGGCTAC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         N. meningitidis partial DNA sequence gnm_27 SEQ ID NO:27.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     434 GluGluArgGlyArgLeuPheAlaLysAlaValGluGluLeu 447
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    GCGCACCGTTCGGAAGTGTTTATCGAAGCGTTTAAGGCTTTG 31
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     AAA81479 standard; DNA; 69936
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               98US-0103794
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Neisseria meningitidis
```

Page

```
52379
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  105
                                                                                                                                                                                                                                                                                                                                                                                          represent specifically claimed Neisseria meningitidis genomic DNA sequences; AAA81303 and AAB25620 to AAB25663 represent Neisseria DNA sequences and their corresponding proteins; AAA81254 to AAA81259 and AAA81321 represent PCR primers used in the Isolation of Neisseria meningitidis DNA sequences; and AAA81322 to AAA81452 represent Neisseria meningitidis DNA sequences; and AAA81322 to AAA81452 represent Neisseria meningitidis Menb polynucleotide ORF sequences, which are all used in the exemplification of the present invention. The nucleic acid sequences, protein sequences, and antibodies against them, can be used in the manufacture of a composition. The composition can be used in the manufacture of a composition of the present neighboring preventing or diagnosing infection due to Neisserial bacteria. For example, some of the identified proteins could be components of vaccines against Meningococcus B; against all serotypes, and addor against all pathogenic Neisseriae. Identification of sequences
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         20
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   70
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   11 IleValValGlyLeuGlyLysSerGlyMetSerLeuValArgTyrLeuAlaArgArgGly 30
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          from the bacterium will also facilitate production of biological probes, particularly organism-specific probes. Attempts to make efficacious Meningococcus B vaccines have failed mainly due to antigen tolerance.
                                                                                                            Scarlato V;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               111 :::1111111111:::111 111 111 :::
52438 GATATTCTGGCTCTCAGTCAGCGAGCGGCAGCGGGATATTGAGGCGTTCAAG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          LeuProPheAlaValValAspThrArgGluAsnProProGluLeuAlaThrLeuArgAla
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     52558 GCGGAGGTTGCTGCGTATGATGCGGAGCTGAAGCCGGAACGCGTGTCGCAAATCGGTAAG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              GlnTyrProGlnValGluValArgCysGlyGluLeuAspAlaGluPheLeuCysSerAla
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  91 AlaLysGlyValArgIleSerGlyAspIleAspLeuPheAla-------Arg
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            52498 ATGTTTGACGGGTTGGTGTTTTACACGGGCCGTCTGAAAGATGCGCTGGACAACGTTTC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ArgGluLeuTyrValSerProGlyLeuSerLeuArgThrProAlaLeuValGlnAlaAla
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Multivalent vaccines have also been tried but none have successfully overcome antiqenic variability. The provision of further, complete sequences may provide an opportunity to identify secreted or surface exposed proteins that may be presumed targets for the immune system a which are not antigenically variable or at least more conserved than
                                                                                                                                                                                                                    Isolated nucleotide sequences of Neisseria meningitidis which can be used in the diagnosis and treatment of N. meningitidis infection and other Neisserial infections, for example, N.gonorrhoea -
                                                                                                                                                                                                                                                                                                                                                   The present invention describes methods of obtaining immunogenic proteins from Neisserla genomic sequences. AAAB1453 to AAAB2414
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Sequence 69936 BP; 16512 A; 19259 C; 17399 G; 16763 T; 3 other;
                                                                                     H, Venter JC;
Scarselli M,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Matches:
Conservative:
Mismatches:
                                                                                     Tettelin H,
Ratti G, Sc
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Length:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Indels:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       US-09-701-229-2 (1-448) x AAA81479 (1-69936)
                                                                                                                                                                                                                                                                                                           Claim 7; Page 547-567; 1760pp; English.
                                                                                       ρX
                                                                                     Frazer CM, Hickey E, Peterson
Masignani V, Galeotti C, Mora
Rappuoli R, Pizza M;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       other more variable regions
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    58e-55
99US-0132068
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  704.00
53.52%
38.11%
31.15%
                                              (CHIR ) CHIRON CORP.
                                                                                                                                                                          WPI; 2000-318079/27.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Percent Similarity:
Best Local Similarity:
Query Match:
30-APR-1999;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         31
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   21
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        71
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Pred. No.:
  q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         δλ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ద
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     g
```

```
51589 ATGGGTAAAGGGCAGGACTTCACGCCCCTGCGCGATGCACTGGTAGGCAAGGCAAAAGGC 51530
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          51818
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      GCCGCGATTGCCGGTTTG------CAAAATCCGCTCTTCGTGATTTTGGCCGC 51590
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      51529 GIGTTCTTGATTGGTGTCGATGCGCCGCAAATCCGCCGCGATTTGGACGGCTGCGGCTTG 51470
                                                                                                                                                                             52145
                                                                                                                                                                                                                                                                                                                                                                                                                                                                    -----TGCCGCGCGATGAAGCGTGCCGGGCGCGAGGTA 51935
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   GAGAAAAACGGCGTGGTGTTTATCGACGACAACGCAAGGCACGAATGTCGGCGCGCGACTGCC 51638
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      354
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              374
                                                                     145
                                                                                                                                             161
                                                                                                                                                                                                                 181
                                                                                                                                                                                                                                                                                     LeuAsnValSerGluAspHisMetAspArgTyrAspGlyMetAlaAspTyrHisLeuAla 201
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        355 AspGlyLysGlyAlaAspPheHisAspLeuArgGluProValAlaArgPheCysArgAla
                                                                                                                                                                                                                                    202 LysHisArgllePheArgGlyAlaArgGlnValValValAshArgAlaAspAlaLeuThr
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 51877 CTGAAACAAGGCAATGAAGATTTGATTGTCACGCAAGACATTCCGTTGCAAGGTCTGCAC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 GluGlyAspAlaValLeuLeuSerProAlaCysAlaSerLeuAspMetPheLysAsnPhe
                    52264 CTGGTCGGCTATCTCTGTATCAAGTGCGGGCTGGATACCGTTATCGCGGGCAATATCGGC
                                                                                                                                           ---LeuAlaAspAspIleGluLeuTyrValLeu
                                                                                                                                                                               52204 ACGCCGGTTTTGGAGGCGGAATGGCAGCGCGAAGGCAAAAAGGCGGACGTGTGGTGTTG
                                                                                                                                                                                                                                                                                                                                                                                                                                  222 ArgProLeulleAlaAspThrValProCysTrpSerPheGlyLeuAsnLysProAspPhe
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             51934 AAATGGTTTTCGTTG---GAACACGAAGCTGATTTCTGGTTGGAACGCGAGACAGGCCGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               -------AspLysLeuLeuProValGlyGluLeuLysIleArgGlyAlaHis
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     AsnTyrSerAsnAlaLeuAlaAlaLeuAlaLeuGlyH1sAlaValGlyLeuProPheAsp
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           295 AlaMetLeuGlyAlaLeuLySAlaPheSerGlyLeuAlaHisArgCySGlnTrpValArg
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             51757 GCATTGCTCGAACACGTCAAAACCTTCCAAGGCCTGCCGCACCGCGTGGAAAAATCGGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 GluArgGlnGlyValSerTyrTyrAspAspSerLysAlaThrAsnValGlyAlaAlaLeu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      AlaalaIleGluGlyLeuGlyAlaAspIleAspGlyLysLeuValLeuLeuAlaGlyGly
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ValValLeuLeuGlyArgAspAlaGlyLeuIleAlaGlnAlaLeu---GlyAsnAlaVal
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         394 ProLeuValArgValAlaThrLeuAspGluAlaValArgGlnAlaAlaGluLeuAlaArg
106 GlualaLysalaProlleValAlaIleThrGlySerAsnAlaLysSerThrValThrThr
                                                                       LeuvalGlyGluMetAlavalAlaAlaAspLysArgvalAlaValGlyGlyAsnLeuGly
                                                                                                                                                                                                                 GluLeuSerSerPheGlnLeuGluThrCysAspArgLeuAsnAlaGluValAlaThrVal
                                                                                                                                                                                                                                                                                                                                                                                                5024 AAAGCCAAGATTTTCCGTGGCGACGGCGTGCAGGTTTTGAATGCGGACGATGCGTTC---
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          LysalaPheGlyLeuIleGluGluAspGlyGlnLysTrpLeuAlaPheGlnPhe---
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             51349 GCGCACCGTTCGGAAGTGTTTATCGAAGCGTTTAAGGCTTTG 51308
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             434 GluGluArgGlyArgLeuPheAlaLysAlaValGluGluLeu 447
                                                                                                                                             146 ThrProAlaLeuAspLeu----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        51637
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          242
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  315
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        335
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      375
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 260
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     275
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    51697
                                                                       126
                                                                                                                                                                                                                                                                                        182
                                                                                                                                                                                                                                                                                                                                                                                                                                                                      51967
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           δy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           g
                                                                                                                                                                                                                                                 g
                                                                                                                                                                                                                                                                                      ò
                                                                                                                                                                                                                                                                                                                       g
                                                                                                                                                                                                                                                                                                                                                          ò
                                                                                                                                                                                                                                                                                                                                                                                            g
                                                                                                                                                                                                                                                                                                                                                                                                                                  δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                    g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        δy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     à
                                                                                                                                           à
                                                                                                                                                                             g
                                                                                                                                                                                                                 δ
                                 a
                                                                     ò
                                                                                                   g
```

```
The present invention describes the full length genome of Neisseria meningitidis B (NMB). The sequences in AAF21544 and AAF21607 to AAF21613 represent fragments of the NMB genomic sequence, as the sequence was too long to go in a record on its own it was split into 8 sequences which overlap each other at the beginning and end of each sequence by 49980 bp (i.e. the last 49980 bp of AAF21607 are repeated at the beginning of AAF21607, the last 49980 bp of AAF21607 are repeated at the beginning of AAF21607, the last 49980 bp of AAF21607 are repeated at the beginning of AAF21607, the last 49980 bp of AAF21598 encode the Neisseria proteins given in AAB58550 to AAB51545 to AAF21589 to AAF21606 represent PCR primars which are used in the exemplification of the present invention. The NMB genome and fragments from it have antibacterial activity, and can be used in vaccines and gene therapy. Neisserial activity, and can be used in vaccines and gene therapy. Neisserial bacteria or as a diagnostic reagent for detecting the present of meisserial bacteria or of antibodies raised to Neisserial
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      bacteria. Computers, computer memory, computer storage medium or computer databases can be used in a search to identify open reading frames (ORFs) or coding sequences within the NMB genome. The DNA sequences provide
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 further opportunities to find antigenic or immunogenic proteins which are more effective in vaccines than the outer membrane proteins currently
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Masignani V;
Rappuoli R;
                                                                                                                                                                                                  Neisseria meningitidis; Neisseria gonorrheae; immunogenic; vaccine; diagnosis; antigen; detection; infection; gene therapy; antibacterial;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Neisseria meningitidis B full length genome sequence and open reading frames are used to detect, treat and prevent Neisserial infections - \,
                                                                                                                                                           Neisseria meningitidis B nucleotide sequence SEQ ID NO:108.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Venter JC,
Scarlato V,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Tettelin H,
Scarselli M,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Claim 7; Appendix A; 692pp; English.
                                      AAF21607 standard; DNA; 349980 BP.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ٦,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Peterson J
Ratti G,
                                                                                                                                                                                                                                                                                                                                                                                                38-MAR-2000; 2000WO-US05928
                                                                                                                                                                                                                                                                                                                                                                                                                                      99US-0132068
                                                                                                                                                                                                                                                                                                                                                                                                                                                         08-OCT-1999; 99WO-US23573
28-FEB-2000; 2000GB-0004695
                                                                                                                    (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  GENO-) INST GENOMIC RES.
                                                                                                                                                                                                                                                                               Neisseria meningitidis
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Pizza M, Hickey E, 1
Galeotti C, Mora M,
Frazer CM, Grandi G;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                CHIR ) CHIRON CORP.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   WPI; 2000-647603/62
                                                                                                                                                                                                                                                                                                                  WO200066791-A1.
                                                                                                                  13-MAR-2001
                                                                                                                                                                                                                                                                                                                                                                                                                                      30-APR-1999;
                                                                                                                                                                                                                                                                                                                                                         09-NOV-2000
                                                                             AAF21607;
RESULT 12
AAF21607
```

Sequence 349980 BP; 84410 A; 84863 C; 94187 G; 86520 T; 0 other;

```
Alignment Scores: 2.97e-54 Length: 349980 Score: 704.00 Matches: 173 Percent Similarity: 53.52% Conservative: 70 Best Local Similarity: 38.11% Mismatches: 37 Owery Match: 21.15% Gaps: 8
```

```
128749 GATATICIGGCICTCAGICCGGCAICAGCGGGGGGGGGGAGTCAAG 128808
                                                                                                                                                                                                                                                                                                                                      128689 ATGTTTGACGGGTTGGTGTTTTACACGGGCCGTCTGAAAGATGCGCTGGAACGGTTTC 128748
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                128983 ACGCCGGTTTTGGAGGCGGAATGGCAGCGCGAAGGCAAAAAGGCGGACGTGTGGTGTTG 129042
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     129163 AAAGCCAAGATTTTCCGTGGCGACGCGTGCAGGTTTTGAATGCGGACGATGCGTTC--- 129219
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     129489
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             129253 AAATGGTTTTCGTTG---GAACACGAAGCTGATTTCTGGTTGGAACGCCGAGACAGGCCGC 129309
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                129310 CTGAAACAAGGCAATGAAGATTTGATTGTCACGCAAGACATTCCGTTGCAAGGTCTGCAC 129369
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            129550 GCCGCGATTGCCGGTTTG------CAAAATCCGCTCTTCGTGATTTTGGGCGGC 129597
                                                                                                                                                                                                                                                                                                                                                                                                                                                        145
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                201
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              274
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         334
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              354
                                                                                                                                                                                                                                               71 ArgGluLeuTyrValSerProGlyLeuSerLeuArgThrProAlaLeuValGlnAlaAla
                                                                                                                                                                                                                                                                                                                                                                                     106 GlualaLysAlaProlleValAlaIleThrGlySerAsnAlaLysSerThrValThrThr
                                                                                                                                                                                                                                                                                                                                                                                                                                                        LeuValGlyGluMetAlaValAlaAlaAspLysArgValAlaValGlyGlyAsnLeuGly
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              162 GluLeuSerSerPheGlnLeuGluThrCysAspArgLeuAsnAlaGluValAlaThrVal
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 LeuAsnValSerGluAspHisMetAspArgTyrAspGlyMetAlaAspTyrHisLeuAla
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   LysHisArgIlePheArgGlyAlaArgGlnValValValAsnArgAlaAspAlaLeuThr
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        222 ArgProLeulleAlaAspThrValProCysTrpSerPheGlyLeuAsnLysProAspPhe
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 275 AsnTyrSerAsnAlaLeuAlaAlaLeuAlaLeuGlyHisAlaValGlyLeuProPheAsp
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           GluArgGlnGlyValSerTyrTyrAspAspSerLysAlaThrAsnValGlyAlaAlaLeu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              AlaAlaIleGluGlyLeuGlyAlaAspIleAspGlyLysLeuValLeuLeuAlaGlyGly
                                                                                                       31 LeuProPheAlaValValAspThrArgGluAsnProProGluLeuAlaThrLeuArgAla
                                                                                                                                                                          GlnTyrProGlnValGluValArgCysGlyGluLeuAspAlaGluPheLeuCysSerAla
                                                                                                                                                                                                                                                                                                                    91 AlaLysGlyValArgIleSerGlyAspIleAspLeuPheAla------Arg
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           146 ThrProAlaLeuAspLeu------LeuAlaAspAspIleGluLeuTyrValLeu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              --------AspLysLeuLeuProValGlyGluLeuLysIleArgGlyAlaHis
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      295 AlaMetLeuGlyAlaLeuLysAlaPheSerGlyLeuAlaHisArgCysGlnTrpValArg
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            LysAlaPheGlyLeuIleGluGluAspGlyGlnLysTrpLeuAlaPheGlnPhe----
US-09-701-229-2 (1-448) x AAF21607 (1-349980)
                                                                                                                                                                                                                                                                                                                                                                                                                                                        126
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   182
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    202
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            242
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 260
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           315
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              335
                                                                   g
                                                                                                                                       d
                                                                                                                                                                          ò
                                                                                                                                                                                                            g
                                                                                                                                                                                                                                                                              g
                                                                                                                                                                                                                                                                                                                                                                                                                      셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     g
                                    à
                                                                                                         à
                                                                                                                                                                                                                                               δ
                                                                                                                                                                                                                                                                                                                    à
                                                                                                                                                                                                                                                                                                                                                      d
                                                                                                                                                                                                                                                                                                                                                                                     ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                          ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           õ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ò
```

```
129598 ATGGTAAAGGCAGGACTTCACGCCCTGCGCGATGCACTGGTAGGCAAGGCAAAAAGC 129657
                                                                                                                                                                                                                                                               129778 GCAGGCGATATTGTGTTGCTCAGCCCCGCCTGCGCAGCTTTGATATGTTCAAAGGCTAC 129837
                                                                                                                Gretrerrearrecrearedecececeanarececeecearrrecaecececere 129717
                                                                                                                                                                                                 129718 AATATGACCGACTGCGCCACTTTGGGAGAAGCCGTTCAGACGGCATATGCCCCAAGCCGAA 129777
                                                                                                                                                           394 ProLeuvalargvalalaThrLeuAspGluAlavalArgGlnAlaAlaGluLeuAlaArg 413
                                                                                                                                                                                                                                        GluGlyAspAlaValLeuLeuSerProAlaCysAlaSerLeuAspMetPheLysAsnPhe 433
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       represent specifically standard Neisseria meningitidis genomic DNA sequences; AAAB1260 to AAAB1303 and AAB25620 to AAB25663 represent Neisseria DNA sequences and their corresponding proteins; AAAB1264 to AAAB1269 and AAAB1301 represent PCR primers used in the AAAB1259 and AAAB131 represent PCR primers used in the AAAB1451 represent Neisseria meningitidis DNA sequences; and AAAB132 to AAAB1452 represent Neisseria meningitidis DNA sequences; and AAAB1322 to AAAB1452 represent Neisseria meningitidis Menb polynucleotide ORF sequences, which are all used in the exemplification of the present invention. The nucleic acid sequences, protein sequences, and antibodies against them, can be used in the manufacture of a composition. The medicament (or in the manufacture of a medicament) for treating, preventing or diagnosing infection due to
355 AspGlyLysGlyAlaAspPheHisAspLeuArgGluProValAlaArgPheCysArgAla 374
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Tettelin H, Venter JC;
Ratti G, Scarselli M, Scarlato V;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          antigen; vaccine; diagnosis; infection; antibacterial; identification; Meningococcus B; MenB; ds.
                                                                            ValValLeuLeuGlyArgAspAlaGlyLeuIleAlaGlnAlaLeu---GlyAsnAlaVal
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Isolated nucleotide sequences of Neisseria meningitidis which can be used in the diagnosis and treatment of N. meningitidis infection and other Neisserial infections, for example, N.gonorrhoea -
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Neisseria meningitidis; Neisseria gonorrheae; genome; immunogenic;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     N. meningitidis B full length genome DNA sequence SEQ ID NO:1068.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   The present invention describes methods of obtaining immunogenic proteins from Neisseria genomic sequences. AAA81453 to AAA82414
                                                                                                                                                                                                                                                                                                                                                129838 GCGCACCGTTCGGAAGTGTTTATCGAAGCGTTTAGGCTTTG 129879
                                                                                                                                                                                                                                                                                                                         434 GluGluArgGlyArgLeuPheAlaLysAlaValGluGluLeu 447
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Claim 7; Page 866-1272; 1760pp; English.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  'nΣ
                                                                                                                                                                                                                                                                                                                                                                                                                                                AAA81490 standard; DNA; 1437668 BP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Frazer CM, Hickey E, Peterson
Masignani V, Galeotti C, Mora
Rappuoli R, Pizza M;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      99WO-US23573
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            98US-0103794
99US-0132068
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Neisserla meningitidis.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          (CHIR ) CHIRON CORP.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               WPI; 2000-318079/27.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     WO200022430-A2.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      08-OCT-1999;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               04-DEC-2000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              09-OCT-1998;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 30-APR-1999;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             20-APR-2000.
                                                                            375
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      AAA81490;
                                                                                                                  129658
                                                                                                                                                                                                                                                                                                                                                                                                                          RESULT
                                                                                                                                                                                                                                                                              g
                                                                                                                                                                                                                                                                                                                         ò
                                                                                                                                                                                                                                                                                                                                                             8
                                  g
                                                                                                              g
                                                                                                                                                         ò
                                                                                                                                                                                               요
                                                                                                                                                                                                                                          ò
à
                                                                            ò
```

```
428629 GCGCAGGTTGCTGCGTATGATGCGGAGCTGAAGCCGGAACGCGTGTCGCAAATCGGTAAG 428688
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       429043 GAGCITICCAGCITCCAACTGGAAAACACCGAAAGCCTGCGTCCGACTGCGGCGACGGTG 429102
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               -----TGCCGCGCGATGAAGCGTGCCGGGCGCGAGGTA 429252
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    428628
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             428689 ATGTTTGACGGGTTGGTGTTTTACACGGGCCGTCTGAAAGATGCGCTGGACAACGGTTTC 428748
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            105
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     145
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        106 GluAlaLysAlaProIleValAlaIleThrGlySerAsnAlaLysSerThrValThrThr 125
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 161
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            162 GluLeuSerSerPheGlnLeuGluThrCysAspArgLeuAsnAlaGluValAlaThrVal 181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           201
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  · 222 ArgProLeuileAlaAspThrValProCysTrpSerPheGlyLeuAsnLysProAspPhe 241
            be components of vaccines against Meningococcus B; against all serotypes, and/or against all pathogenic Neissariae. Identification of sequences from the bacterium will also facilitate production of biological probes, particularly organism-specific probes. Attempts to make efficacious particularly organism-specific probes. Attempts to make efficacious Meningococcus B vaccines have failed mainly due to antigen tolerance. Multivalent vaccines have also been tried but none have successfully overcome antigent variability. The provision of further, complete sequences may provide an opportunity to identify secreted or surface which are not antigenically variable or at least more conserved than other more variable regions.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      70
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 90
                                                                                                                                                                                                                                                                                                                                                                                                                                                                               30
some of the identified proteins could
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     428809 CAAAACGGGGGGCGGGTTGGGCGACATTGCTGGCGGGACATTGTGAACCGCCGG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 146 ThrProAlaLeuAspLeu------LeuAlaAspAspIleGluLeuTyrValLeu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             LeuAsnValSerGluAspHisMetAspArgTyrAspGlyMetAlaAspTyrHisLeuAla
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                51 GlnTyrProGlnValGluValArgCysGlyGluLeuAspAlaGluPheLeuCysSerAla
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 71 ArgGluLeuTyrValSerProGlyLeuSerLeuArgThrProAlaLeuValGlnAlaAla
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                91 AlaLysGlyValArgIleSerGlyAspIleAspLeuPheAla------Arg
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     126 LeuValGlyGluMetAlaValAlaAlaAspLysArgValAlaValGlyGlyAsnLeuGly
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             428923 CTGGTCGCCTATCTCTGTATCAAGTGCGGCTGGATACCGTTATCGCGGGCAATATCGGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       LysHisArgIlePheArgGlyAlaArgGlnValValValAsnArgAlaAspAlaLeuThr
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 11 IleValValGlyLeuGlyLysSerGlyMetSerLeuValArgTyrLeuAlaArgArgGly
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            LeuProPheAlaValValAspThrArgGluAsnProProGluLeuAlaThrLeuArgAla
                                                                                                                                                                                                                                             Sequence 1437668 BP; 344338 A; 353206 C; 385074 G; 355045 T; 5 other;
                                                                                                                                                                                                                                                                                                        1437668
                                                                                                                                                                                                                                                                                                                          Matches:
Conservative:
Mismatches:
                                                                                                                                                                                                                                                                                                      Length:
                                                                                                                                                                                                                                                                                                                                                                                Indels:
                                                                                                                                                                                                                                                                                                                                                                                                                                           (1-1437668)
Neisserial bacteria. For example,
                                                                                                                                                                                                                                                                                                                                                                                                                                           US-09-701-229-2 (1-448) x AAA81490
                                                                                                                                                                                                                                                                                                        1.91e-53
                                                                                                                                                                                                                                                                                                                          704.00
53.52%
38.11%
31.15%
                                                                                                                                                                                                                                                                                                                                              Percent Similarity:
Best Local Similarity:
                                                                                                                                                                                                                                                                                      Alignment Scores:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             182
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         202
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          129220
                                                                                                                                                                                                                                                                                                                                                                                  Query Match:
                                                                                                                                                                                                                                                                                                            ..
S
                                                                                                                                                                                                                                                                                                                              Score
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ά
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ŏ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ద
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            g
2222222222222
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ŏ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      q
```

```
ò
                                                                                                                                                                                                                                                           g
                                                                                                                                                                                                                                                                               ò
                                                                                                                                                                                                                                                                                                g
                                                                                                                                                                                                                                                                                                                                   g
                                                                                                                                                                                                                                                                                                                                                                     g
                                                                                                                                                                                                                                                                                                                                                                                                           QQ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     셤
                                                                                                                                                                                                                                                                                                                  ò
                                                                                                                                                                                                                                                                                                                                                       ογ
                                                                                                                                                                                                                                                                                                                                                                                       ŏ
                                                                                                                                                                                                                                                                                                                                                                                                                               ò
                                                                                                                                                                                                                                                                                                                                                                                                                                              g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                  δý
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ò
                 AAATGGTTTTCGTTG---GAACACGAAGCTGATTTCTGGTTGGAACGCGAGACAGGCCGC 429309
                                                429310 CTGAAACAAGGCAATGAAGTTTGATTGTCACGCAAGACATTCCGTTGCAAGGTCTGCAC 429369
                                                                                   GCATTGCTCGAACACGTCAAAACCTTCCAAGGCCTGCCGCACCGCGTGGAAAAAATCGGC 429489
                                                                                                                                              429598 ATGGGTAAAGGGCAGGACTTCACGCCCCTGCGCGATGCACTGGTAGGCAAGGCAAAGGC 429657
                                                                                                                                                                                                        429597
                                                                                                                                                                                                                                                                               429717
                                                                                                                                                                                                                                                                                                         429778 GCAGGCGATATTGTGTTGCTCAGCCCGCCTGCGCGAGCTTTGATATGTTCAAAGGCTAC 429837
                                                                        AsnTyrSerAsnAlaLeuAlaAlaLeuAlaLeuGlyHisAlaValGlyLeuProPheAsp
                                                                                                           AlaMetLeuGlyAlaLeuLySAlaPheSerGlyLeuAlaHisArgCysGlnTrpValArg
                                                                                                                                                                                              ValValLeuLeuGlyArgAspAlaGlyLeuIleAlaGlnAlaLeu---GlyAsnAlaVal
                                                                                                                                                                                                                                                                           129658 GIGITCITGATIGGIGICGATGCGCCGCAAATCCGCCGCGATITGGACGGCTGCGGCTTG
                                                                                                                                                                                                                                                                                             394 ProLeuValArgValAlaThrLeuAspGluAlaValArgGlnAlaAlaGluLeuAlaArg
LysAlaPheGlyLeuIleGluGluAspGlyGlnLysTrpLeuAlaPheGlnPhe----
                                                                                                                                                                                                                       AspGlyLysGlyAlaAspPheHisAspLeuArgGluProValAlaArgPheCysArgAla
                                                                                                                                                                                                                                                                                                                                  414 GluGlyAspAlaValLeuLeuSerProAlaCysAlaSerLeuAspMetPheLysAsnPhe
                                    AlaAlaIleGluGlyLeuGlyAlaAspIleAspGlyLysLeuValLeuLeuAlaGlyGly
                                                                                                                                                                                                                                                                                                                                                                                  429838 GCGCACCGTTCGGAAGTGTTTATCGAAGCGTTTAAGGCTTTG 429879
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ds
                                                                                                                                                                                                                                                                                                                                                                       GluGluArgGlyArgLeuPheAlaLysAlaValGluGluLeu 447
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        gene;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       vaccine; gene therapy;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   gonorrhoeae nucleotide sequence SEQ ID 7645
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ä
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Monaci
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Masignani V,
                                                                                                                                                                                                                                                                                                                                                                                                                             ABZ41528 standard; DNA; 1335
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            12-FEB-2002; 2002WO-IB02069
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                12-FEB-2001; 2001GB-0003424
                                                                                                                                                                                                                                                                                                                                                                                                                                                                  (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Antibacterial; infection;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Neisseria gonorrhoeae,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Fontana MR, Pizza M,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      WPI; 2003-058415/05.
P-PSDB; ABP80558.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 CHIR-) CHIRON SPA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        40200279243-A2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                 07-MAR-2003
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           10-OCT-2002
                                                                                                                                                315
                                                                                                                                                                                   335
                                                                                                                                                                                                                       355
242
                 429253
                                   260
                                                                                         429370
                                                                                                           295
                                                                                                                              429430
                                                                                                                                                                                                     429550
                                                                                                                                                                                                                                                                                                                                                                                                                                                ABZ41528;
                8
                                                                                                                          g
                                                                                                                                                                                                  q
                                                                                                                                                                                                                                     g
                                                                                                                                                                                                                                                                           a
                                   ö
                                                    셤
                                                                       å
                                                                                        유
                                                                                                          ç
                                                                                                                                              ò
                                                                                                                                                             g
                                                                                                                                                                             ò
                                                                                                                                                                                                                       ð
                                                                                                                                                                                                                                                         õ
                                                                                                                                                                                                                                                                                             ò
                                                                                                                                                                                                                                                                                                          . පු
                                                                                                                                                                                                                                                                                                                                  ö
                                                                                                                                                                                                                                                                                                                                                   g
                                                                                                                                                                                                                                                                                                                                                                     à
                                                                                                                                                                                                                                                                                                                                                                                        g
```

```
204
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           264
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   107
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              324
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        127
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              384
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             147
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   444
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              163
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        504
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                183
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         564
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   203
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             624
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        223
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     99
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     GCGGAGGTTGCCGCTTATGATGCGGAGCTGAAAGCCGAAGCGGCGTGGCGCAAATCGGTAAG 144
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             20
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                70
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            84
                                                                                                  Also discolosed are the nucleic acid molecules encoding the proteins and antibodies that specifically bind to the proteins. The composition comprising the protein, nucleic acid or antibody is useful for the manufacture of a medicament for treating or preventing N. gonornhoeae infection, this may be in the form of a vaccine or gene therapy.

Sequences given in records ABZ37706-ABZ42016 represent nucleic acid molecules of the invention.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          11 IleValValGlyLeuGlyLysSerGlyMetSerLeuValArgTyrLeuAlaArgArgGly
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   25 CTCGTCGCCGGACTTGGCGGCACATTTCCATGATTGCCTATCTGCGCAAAAACGGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             LeuProPheAlaValValAspThrArgGluAsnProProGluLeuAlaThrLeuArgAla
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              51 GlnTyrProGlnValGluValArgCysGlyGluLeuAspAlaGluPheLeuCysSerAla
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                71 ArgGluLeuTyrValSerProGlyLeuSerLeuArgThrProAlaLeuValGlnAlaAla
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           91 AlaLysGlyValArgileSerGlyAspIleAspLeuPheAla-----ArgGluAla
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            GGCGACAAGGTGATTGCGATTACCGGCAGCAACGCAAAACCACGGTAACGAGCCTGGTC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      GlyGluMetAlaValAlaAlaAspLysArgValAlaValGlyGlyAsnLeuGlyThrPro
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ||| ::: ::: ::: 385 GGCTACCATACCGTCATACCGCGCAATATCGGTACGCCG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  SerSerPheGlnLeuGluThrCysAspArgLeuAsnAlaGluValAlaThrValLeuAsn
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ArgilePheArgGlyAlaArgGlnValValValAsnArgAlaAspAlaLeuThrArgPro
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             224 LeuIleAlaAspThrValProCysTrpSerPheGlyLeuAsnLysProAspPheLysAla
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      145 ATGTTTGACGGGCTGGTGTTTTACACGGGTCGTCTGAAAGATGCGTTGGACAACGGTTTC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            265 CAAAACGGCGGCGCGTGCTAGGCGACATTGTGAATTGTGAATTGTGAACCGCGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        LysalaProlleValAlaIleThrGlySerAsnAlaLysSerThrValThrThrLeuVal
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                148 AlaLeuAspLeu------LeuAlaAspAspIleGluLeuTyrValLeuGluLeu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        445 GTTTTGGAGGCAGAATTGCAGCGCGAAGGCAAAAAGGCGGACGTGTGGGTGTTGGAGCTT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         505 recacerrecaacregaaacacegaaageerecegeegacgeegacgergargaac
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              S65 ATTTCCGAAGACCATCTCGACCGCTACGACGATTGCTCGACTACGCGCATACCAAGCC
    of
New protein from Neisseria gonorrheae, useful for the manufacture medicament for treating or preventing N. gonorrheae infection
                                                                                                                                                                                                                                                                                                  Sequence 1335 BP; 303 A; 341 C; 415 G; 276 T; 0 other;
                                                                                                                                                                                                                                                                                                                                                                   1335
173
66
183
30
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     GAGATTTTCCGTGGCGATGGAGTGCAGGTTTTGAAT----
                                                                                                                                                                                                                                                                                                                                                                 Length:
Matches:
Conservative:
Mismatches:
Indels:
                                                              Page 745-746; 815pp; English.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Gaps:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  (1-1335)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  US-09-701-229-2 (1-448) x ABZ41528
                                                                                                                                                                                                                                                                                                                                                          3.78e-57
701.00
52.88%
38.27%
31.02%
                                                                                                                                                                                                                                                                                                                                                                                                       Percent Similarity:
Best Local Similarity:
                                                                                                                                                                                                                                                                                                                                             Alignment Scores:
                                                                Disclosure;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           31
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        108
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                325
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           128
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  164
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        204
                                                                                                                                                                                                                                                                                                                                                                                                                                        Query Match:
DB:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       199
```

```
Query Match:
DB:
                                                                                                                                                                                                                                                                                                                                                                                         Score:
g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  οy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              à
                                                                                                                                                                                                                                                             1120 CIGATCGGCGTCGATGCGCCGCAAATCCGCCGCGATTTGGACGCTGCGGCTTGAACCTG 1179
                                                                                                                                                                                                                                                                                                                                                 1180 ACCGACTGCGTCACTTTGGAAGAGGCGGTTCAGACGGCATACGCCCAAGCCGAAGCGGGC 1239
                                                                                                                                                                                                                                                                                                                                                                             012 ATTGCCGGTTTG-----CAAAACCCGCTCTTCGTGATTTTGGGCGGCATGGGC 1059
                                                                                                                                                                                     LeuGlyAlaLeuLySAlaPheSerGlyLeuAlaHisArgCysGlnTrpValArgGluArg 316
                                                                                                                                      GlnGlyValSerTyrTyrAspAspSerLysAlaThrAsnValGlyAlaAlaLeuAlaAla 336
                                                                                                                                                                                                         1leGluGlyLeuGlyAlaAspIleAspGlyLysLeuValLeuLeuAlaGlyGlyAspGly 356
                                                                                                                                                                                                                                                 LysGlyAlaAspPheHisAspLeuArgGluProValAlaArgPheCysArgAlaValVal 376
                                                                                                                                                                                                                                                                                       LeuLeuGlyArgAspAlaGlyLeuIleAlaGlnAlaLeu---GlyAsnAlaValProLeu 395
                                                                                                                                                                                                                                                                                                                             396 ValArgValAlaThrLeuAspGluAlaValArgGlnAlaAlaGluLeuAlaArgGluGly 415
                                                                                                                                                                                                                                                                                                                                                                    416 AspAlaValLeuLeuSerProAlaCysAlaSerLeuAspMetPheLysAsnPheGluGlu 435
                                                                                              otitis media;
                          715 TTTTCCTTG---GAACACGAAGCCGATTTTTGGTTGGAACGCGGGACGGGCTGTTAAAA
                                                               772 CAAGGCAATGAAGATTTGATTTCTACGCAAGACATCCCGCTGCAAGGTTTGCACAAGCC
                                             -------AspLysLeuLeuProValGlyGluLeuLysIleArgGlyAlaHisAsnTyr
                                                                                    SerAsnAlaLeuAlaAlaLeuAlaLeuGlyHisAlaValGlyLeuProPheAspAlaMet :::||||| :::|||||||
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Streptococcus pneumoniae; MurD; antibacterial; infection; otitis mecconjunctivitis; pneumonia; bacteraemia; sinusitis; pleural empyema;
        {\tt PheGlyLeuIleGluGluAspGlyGlnLysTrpLeuAlaPheGlnPhe-}
                                                                                                                                                                                                                                                                                                                                                                                                                       Streptococcus pneumoniae MurD nucleotide sequence.
                                                                                                                                                                                                                                                                                                                                                                                                           ArgGlyArgLeuPheAlaLysAlaValGluGluLeu 447
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  (SMIK ) SMITHKLINE BEECHAM CORP. (SMIK ) SMITHKLINE BEECHAM PLC.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                      BP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            conjunctivitis; pneumonia; ba
endocarditis; meningitis; ds.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                   AAX30137 standard; DNA; 2193
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     97US-0934481.
97US-0056335.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  98EP-0306076
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          pneumoniae
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Streptococcus
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   30-JUL-1998;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           18-JUN-1999
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      19-SEP-1997;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 12-AUG-1997;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               07-APR-1999
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           EP906956-A2
                                                                                                        832
                                                                                                                                                                   317
                                                                                                                                                                                                         337
                                                                                                                                                                                                                                                                    090
                                                                                                                                                                                                                                                                                       377
                                                                                                                                                                                                                                                                                                                                                                                                           436
                                                                                                                           297
                                                                                                                                                                                                                                                357
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        AAX30137;
                                              92
                                                                                    277
                                                                                                                                                                                                                                                                                                                                                                                                                                                  RESULT 15
                                                                                                                                                                                                                                                                                                                                                                                                                                                            AAX3013
                         셤
                                                               셤
                                                                                    δ
                                                                                                      g
                                                                                                                          ò
                                                                                                                                            g
                                                                                                                                                                 ò
                                                                                                                                                                                   q
                                                                                                                                                                                                     ŏ
                                                                                                                                                                                                                           g
                                                                                                                                                                                                                                               ò
                                                                                                                                                                                                                                                                  g
                                                                                                                                                                                                                                                                                      õ
                                                                                                                                                                                                                                                                                                          g
                                                                                                                                                                                                                                                                                                                              ð
                                                                                                                                                                                                                                                                                                                                              g
                                                                                                                                                                                                                                                                                                                                                                   õ
                                                                                                                                                                                                                                                                                                                                                                                     g
                                                                                                                                                                                                                                                                                                                                                                                                        à
                                                                                                                                                                                                                                                                                                                                                                                                                           g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                              δ
```

```
(i). MurD polypeptides and polymuclocides are useful for diagnosing diseases due to an infection of an organism with the MurD gene by diseases due to an infection of an organism with the MurD gene by ce determining the nucleic acid sequence encoding MurD polypeptide (1), and/or analysing for the presence or amount of MurD polypeptide (1), can diagnose the stage and type of infection. MurD polypeptides are also useful for sceneing for compounds which affect activity of the protein. Or minibition of the polypeptide (1) and observing the stimulation or inhibition of the polypeptide function. These can be used in treatment or inhibit (antagonist i.e. antibacterial drugs) or enhance (agonist).

Con inhibitions associated with a lack of MurD polypeptides, or direct conditions associated with a lack of MurD polypeptide, or direct conditions associated with a lack of MurD polypeptides or directly, in a vector i.e. gene therapy, and an antibodies induced by the polypeptide are also useful for isolating clones expressing MurD (1), or for purifying the polypeptide by affinity chromatography. Diseases diagnosed, prevented or treated include oftitis media, conjunctivitis, pneumonia, bacteraemia, conjunctivitis, pneumonia, pare useful for use on wounds and body implants to prevent harterial infertial for the matrix proteins, and are useful for use on wounds and body implants to prevent harterial infertial.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            715
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       772
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   832
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          613
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                664
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               95 ArgileSerGlyAspIleAspLeuPheAlaArgGluAlaLysAlaProIleValAlaIle 114
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              115 ThrGlySerAsnAlaLysSerThrValThrThrLeuValGlyGluMetAlaValAlaAla 134
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         39
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        59
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    74
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               94
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     22
                                                                                                                                                                                                                                                                                                                                                                                                The present sequence encodes a Streptococcus pneumoniae MurD polypeptide
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     7 AspHisPheArg------IleValValGlyLeuGlyLysSerGlyMetSerLeu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                554 GCTCGTTTGTTGGACAAGCTAGGTGCCATTGTGACAGTAAATGATGGGAAACCTTTCGAG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        GluAsnProProGluLeuAlaThrLeuArgAlaGlnTyrProGlnValGluValArgCys
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        75 ValSerProGlyLeuSerLeuArgThrProAlaLeuValGlnAlaAlaAlaLysGlyVal
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ---AATCCAGGTATCCCCTACAACAATCCCATGATTGAAAAGGCTTTGGCCAAGGGAATT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            565 GGTGGCCATCCTTTGGAACTCTTGGATGAAGAGTTTGCTCTTATGGTGAAA-----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ValArgTyrLeuAlaArgArgGlyLeuProPheAlaValValAspThrArg-----
                                                                                                                                                                         New Streptococcus pneumoniae MurD polypeptide and polynucleotide, useful as diagnostic reagents and for prevention and treatment of Streptococci infections e:g. pneumonia and meningitis
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              636 A; 437 C; 511 G; 609 T; 0 other;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              and body implants to prevent bacterial infection.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Matches:
Conservative:
Mismatches:
Indels:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Length:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             (1-2193)
Wallis NG;
                                                                                                                                                                                                                                                                                                                         Claim 4; Page 6-8; 29pp; English.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             US-09-701-229-2 (1-448) x AAX30137
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    1.4e-47
603.50
53.16%
35.73%
26.70%
Lonetto MA,
                                                                   WPI; 1999-207110/18.
P-PSDB; AAY04289.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Sequence 2193 BP;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Percent Similarity:
Best Local Similarity:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Alignment Scores:
Fueyo JL,
```

833 ACAGGATCGAACGGTAAGACAACCACAACGACTATGATTGGGGAAGTTTTGACTGCTGCT 892	135 AspLysArgValAlaValGlyGlyAsnLeuGlyThrProAlaLeuAspLeuLeu 152	893 GGGCAACATGGTCTTTATCAGGGAATATCGGCTATCCAGGTAGTCAAGTGGCCCAAACT 952	AlaaspaspileGluLeuTyrValLeuGluLeuSerSerPheGlnLeuGluThrCysAsp		ArgLeuAsnAlaGluValAlaThrValLeuAsnValSerGluAspHisMetAspArgTyr 192	m	AspGlyMetalaAspTyrHisLeualaLysHisArgilePheArgGlyAla 209		210 ArgGlnValValValAsnArgAlaAspAlaLeuThrArgProLeuIleAlaAspThrVal 229 :::   :::	230 ProCysTrpSerPheGlyLeuAsnLysProAspPheLysAlaPheGlyLeulleGluGlu 249	1193 CCATTTTCAACACTTGAAAAGGTTGATGGAGCTTATCTGGAA 1234	250 AspGlyGlnLysTrpLeuAlaPheGlnPheAspLysLeuLeuProValGlyGluLeuLys 269	1235 GATGGTCAACTCTACTTCCGTGGTGAAGTAGTCGTGGCAGCGAATGAAATCGGT 1288	270 IleArgGlyAlaHisAsnTyrSerAsnAlaLeuAlaAlaLeuAlaLeuGlyHisAlaVal 289	1289 GITCCAGGIAGCCACAATGIGGAAAATGCCCTIGCGACIAITGCIGIAGCCAAGCITCGT 1348	290 GlyLeuProPheAspAlaMetLeuGlyAlaLeuLysAlaPheSerGlyLeuAlaHisArg 309	1349 GGTGTGGACAATCAAACCATCAAGGAAACTCTTTCAGCCTTCGGTGGTGTCAAACACCGT 1408	310 CysGlnTrpValArgGluArgGlnGlyValSerTyrTyrAspAspSerLysAlaThrAsn 329    :::    ::: :::     :::	e,	15	350 LeuLeuAlaGlyGlyAspGlyLysGlyAlaAspPheHisAspLeuArgGluProValAla 369	1520 TIGAGGTGGTTTGGACCGTGGCAATGAGTTTGACGAATTGGTGCCAGACATT 1576	370 ArgPheCysArgAlaValValLeuLeuGlyArgAspAlaGlyLeuIleAlaGlnAlaLeu 389	1577 ACTGGACTCAAGAAGATGGTCATCCTGGGTCAATCTGCAGAACGTGTCAAQCGGGGAGCA 1636	390 GlyAsnAlaValProLeuValArgValAlaThrLeuAspGluAlaValArgGlnAla 408	1637 GACAAGGCTGGTGTCGCTTATGTGGAGGCGACAGATATTGCAGATGCGACCGGCAAGGCC 1696	409 AlaGluLeuAlaArgGluGlyAspAlaValLeuLeuSerProAlaCysAlaSerLeuAsp 428	1697 TATGAGCTTGCGACTCAAGGAGATGTGGTTCTTTAGTCCTGCCAATGCCAGCTGGGAT 1756	429 MetPheLysAsnPheGluGluArgGlyArgLeuPheAlaLysAlaValGluGluLeu 447	1757 ATGTATGCTAACTTGAAGTACGTGGCGACCTCTTTATCGACACAGTAGCGGAGTTA 1813
qq	ô	qq	ð, í	â	දු ද	2	ð á	8	P 6	δ	a	ŏ	ΩQ	ογ	qq	ò	qq	65 63	οχ	đ	ò	qq	ογ	qq	ογ	qq	δy	β	δ	. <b>Q</b>

Search completed: August 14, 2003, 07:47:54 Job time: 2055 secs

```
Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.
                                                                                                                                                                                                                                                                                                                                                                                                                                SUMMARIES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      AR274513_11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               AE015046
AE016978
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          AE014016
AE013119
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        AE004856
AY008276
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         AX044029
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              AE016755
                                                                                                                                                                                                                                                                                       em_htgo_other:*
                                               em_htg_inv:*
em_htg_other:*
                                                                                                                                                                                                                 em_sy:*
em_htgo_hum:*
                                                                                                                                                                                                                                                                   em_htgo_mus:*
                        em_htg_hum: *
                                                                                                                  em_htg_pln:*
em_htg_rod:*
                                                                                                                                                                                          em_htg_vrt:*
                                                                                              em_htg_mus:*
                                                                                                                                                                  em_htg_mam:*
                                                                                                                                                                                                                                                                                                                                                                                                                                                         å
Query
Match Length DB
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     24000
5280
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          251050
  em_vi:*
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      110000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               301442
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         349980
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              300409
Score
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 908
902
889.5
879
879
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         844.5
832
757.5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           RESULT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Result
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           .
8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Command line parameters:
-WODEL-frame+p2n.model-DEW-xlp
-WODEL-frame+p2n.model-DEW-xlp
-WODEL-frame+p2n.model-DEW-xlp
-Wolf-frame-p2n.model-DEW-xlp
-Wolf-fr
                                                                                                                                                          August 14, 2003, 06:15:45; Search time 4239 Seconds (without alignments) 4323.546 Million cell updates/sec
                                                                                                                                                                                                                                                         US-09-701-229-2
2260
1 MSLIASDHFRIVVGLGRSGM.....MFKNFEERGRLFAKAVEELA 448
                   GenCore version 5.1.6
Copyright (c) 1993 - 2003 Compugen Ltd.
                                                                                                      OM protein - nucleic search, using frame_plus_pzncmodel
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Total number of hits satisfying chosen parameters:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      2888711 segs, 20454813386 residues
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Post-processing: Minimum Match 0%
Maximum Match 100%
Listing first 45 summaries
                                                                                                                                                                                                                                                                                                                                                                            Xgapop 10.0 , Xgapext
Ygapop 10.0 , Ygapext
Fgapop 6.0 , Fgapext
Delop 6.0 , Delext
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Minimises seq length: 25 /
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                gb_om:*
gb_ov:*
gb_ph:*
gb_ph:*
gb_ph:*
gb_pr:*
gb_r:*
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               em_fun:*
em_hum:*
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             em_sts:*
em_un:*
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  gb_ba:*
gb_htg:*
gb_in:*
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   em_pat:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  gb_sy:*
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           t:un_q£
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               gb_v1:*
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        em_ba:*
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 em_in:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          em_mu:*
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             em_om:*
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    em_or:*
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             em_ov:*
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            em_ph:*
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   em_pl:*
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            em_ro:*
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              GenEmbl:*
                                                                                                                                                                                                                                                                                                                                                          BLOSUM62
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Title:
Perfect score:
Sequence:
                                                                                                                                                                                                                                                                                                                                                        Scoring table:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Database :
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Searched:
                                                                                                                                                               Run on:
```

AE016871 Pseudomon AE016960 Coxiella AL627265 Salmonell AE016894 Salmonell AE016899 Salmonell AE01689 Salmonell AE01689 Salmonell AE0180120 Sequence AE00018 Escherichla AE01895 Sequence AE016755 Escherich AE016755 Escherich AE016755 Salmgella AE016978 Shigella AE01895 Shewanell AE013965 Yersinia AU14143 Yersinia AE016978 Shewanell

AE004856 Pseudomon AY008276 Pseudomon

Description

Pseudomon

ALIGNMENTS

AP005074 Vibrio pa AE016798 Vibrio vu AL646072 Ralstonia AE006048 Pasteurel AE004310 Vibrio ch

Wiggleswo

AB063521 V AC020876 N

Mus musco

Neisseria

AE014016 F AE013119 7

Neisseria Sequence Buchnera Thermoana

AP001118

Haemophilus

U32793 Hae AX191762 S

Sequence

AX067460 Sequence

Continuation (12 o Continuation (13 o

```
3
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        accuracy of the protein name.

Class 1: Function experimentally demonstrated in P. acruginosa.

Class 2: Function of highly similar gene experimentally demonstrated in another organism (and gene context consistent in terms of pathways its involved in, if known).

Class 3: Function proposed based on presence of conserved amino acid motif, structural feature or limited sequence similarity to an experimentally studied gene.
                                                                                                                                                                                                                                                                                        Pseudomonadaceae; Pseudomonas.

1 (bases 1 to 24000)

Stover, C.K., Phan, X.-Q.T., Erwin, A.L., Mizoguchi, S.D., Warrener, P., Hickey, M.J., Brinkman, F.S.L., Huffnagle, W.O., Kowalik, D.J., Lagrou, M., Garber, R.L., Goltry, L., Tolentino, E., Westbrock-Wadman, S., Yuan, Y., Brody, L.L., Coulter, S.N., Folger, K.R., Kas, A., Larbig, K., Lim, R.M., Smith, K.A., Spencer, D.H., Wong, G.K.-S., Wu, Z. and Paulsen, I.T.

Complete genome sequence of Pseudomonas aeruginosa PA01, an
                              24000 bp DNA linear BCT 19-FEB-2003
PAO1, section 417 of 529 of the complete
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            2 (bases 1 to 24000)
Stover, C.K., Pham.X.-O.T., Erwin, A.L., Mizoguchi, S.D., Warrener, P., Hickey, M.J., Brinkman, F.S.L., Hufnagle, W.O., Kowalik, D.J., Lagrou, M., Garber, R.L., Goltry, L., Tolentino, E., Westbrock-Wadman, S., Yuan, Y., Brody, L.L., Coulter, S.N., Folger, R.R., Kas, K., Lin, R., Shilan, R., Larbig, K., Lin, R.M., Smith, K.A., Spencer, D.H., Wong, G.K.-S., Wu, Z., Paulsen, I.T., Reizer, J., Saier, M.H.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Homologs of previously reported genes of unknown function, no similarity to any previously reported sequences.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     This represents the February 3, 2003 version of the continually updated, reviewed, Pseudomonas aeruginosa PAOI genome annotation, from PseudoCAP (see http://www.pseudomonas.com for latest updates and links to alternate annotations). PseudoCAP is coordinated by Flona S.L. Brinkman (Simon Fraser University, Canada) and Robert E.W. Hancock (University of British Columbia, Canada). We welcome
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Direct Submission
Submitted (16-MAY-2000) Department of Medicine and Genetics,
University of Washington Genome Center, University of Washington,
Box 352145, Seattle, WA 98195, USA
3 (bases 1 to 24000)
                                                                                                                                                                                                                                   Pseudomonas aeruginosa PAO1
Bacteria, Proteobacteria, Gammaproteobacteria, Pseudomonadales,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Protein name confidence' is used to rate our confidence of the
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Pseudomonas aeruginosa Community Annotation Project (PseudoCAP)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           submission through www.pseudomonas.com of any proposed changes.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Submitted (04-FEB-2003) Department of Molecular Biology and Blochemistry, Simon Fraser University, 8888 University Dr., Burnaby, British Columbia V5A 1S6, Canada
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                /organ="Pseudomonas aeruginosa PAO1"
/mol_type="genomic DNA"
/strain="PAO1"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Opportunistic pathogen
Nature 406 (6799), 959-964 (2000)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  /db_xref="taxon:208964"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              complement(91. .1308)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              complement(91. .1308)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      /gene="argJ"
/locus_tag="PA4402"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Location/Qualifiers
                                                                                                                                                                                                           Pseudomonas aeruginosa PAOl
                                                             Pseudomonas aeruginosa
                                                                                                                 ĀE004856 AE004091
AE004856.1 GI:9950633
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             .24000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Direct Submission
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          10984043
                                                                                            Jenome
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Class
                                                                                                                                                                         KEYWORDS
SOURCE
ORGANISM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                source
AE004856/c
                                                          DEFINITION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     MEDLINE
PUBMED
REFERENCE
AUTHORS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                TITLE
JOURNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             AUTHORS
CONSRTM
TITLE
JOURNAL
                                                                                                              ACCESSION
                                                                                                                                                                                                                                                                                                                         REFERENCE
                                                                                                                                                                                                                                                                                                                                                     AUTHORS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         JOURNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     REFERENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 FEATURES
                                                                                                                                             VERSION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  TITLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             COMMENT
```

```
AGVAETSVLPYSTGVIGEPLPVAKIERALPAALADLAEDRWAEAAAGIWTDTLPKGA
SRQFYHDGYWTVTGISKGAGNIKPNNATMLGYIATDAKVAGGVLODLLRDAANKSFN
RITIDGDTSTNDCCMLIATGRAALPEPTQASGALFAALKQAVLEVSMELAQAIVPDGE
RATKEYTVQVNGGAFHQECLDVGYAVAHSPLIKTALFASDPNWGRILAAVGRAGVANL
DVSKIDVFLGDVCIASRGGRAASYTEEQGAAVWAQAEIGIRIELGRGTGSETIWTDL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      /codon_start=1
/transl_table=11
/transl_table=11
/product="secretion protein SecA"
/protein_id="AAG07791.1"
/db_xref="G1:9956035"
/translation="MFAPLLKKLFGSKNERDVKRMAKAVQAINALEPQMVALSDEQLK
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 PILVGTASIESSEYVSKLLQEAGIEHKVLNAKYHEKEAEIIAQAGAPGSVTIATNMAG
RGTDILLGGNWEVEVAALENPTEEQIAQIKAEWQKRHQQVIEAGGLHVIASERHESRR
IDNQLRGRAGRQGDPGSSRFYLSLEDNLMRIFASDRVKNFWKALGWQSGEAIEHRMVT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           NAI EKAORKYEGRNYDIRKOLLEFDDVANEORKVIYHNRYTLSAEDVGETIKEFREE
TLSATINOHIPPOSLPEOWDIEGLEAALYSDFAVRLPIQOWLDEDDKLYEETLRSKIL
EQIVAAYYEKEELAGAEALRAFEKOMLLRVLDDLWKDHLSTWDHLRHGIHLRGYAQKN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    /codon_start=1
/transl_table=11
/product="hypothetical protein"
/protein_id="sha607192.1"
/db_xref="GI:9950636"
/translation="MHIIFLSRHHGAARSVHLQPRLLMLAGACVVGASLLAGGFWGAW
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            LFRAPAPVAG IEVDAALQAQSAEISSAREDAQRQMDALSVHLGELQARLVRLDALGER
LTELADVDPDEFDFSLSVGGGYDPEPLEGSAX PAPSFMATLDELAARLDTREQQLEVL
EQLLADKHISQSTYLAGQPYRQSY ISSPFGRRVNPVSGRLSMHKGIDFAAPAGSDVVA
VAAGVYTWSGRRKNGTGNVEVGHADGYTTLYAHNQKNLVEVGDLVKRGQVLAKVGSTG
RSTGYHVHFEVMKDGRVMNPQSFIARASVSE"
                                                                                                                                                                                                                                                                                                                                                              /translation="mavglgplstlhpvpgfelgiasagikrpgrkdvvvmrcaegss
vagvftlnafcaapvtlakgrflgevrylltntgnanagtgeaglaaaagtcaklael
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             PROEYKRESFTLFQELLDSTKRDTTRVLSHVOVRREDPABEBARLRRBABELAKRNOF
QHAEAPSMEQAVAGEBEBELPBGPAPVVPLEPVRNEQKIGRNEPCPCGSGKKYKHCHGQ
/locus_tag="PA4402"
/note="Protein name confidence: Class 2 (high similarity for functionally studied protein); Subcellular localization: Cytoplasmic; Subcellular localization confidence: Class 2; Alt protein name: ornithine
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       /locus_tag="PA4403"
/note="Protein name confidence: Class 2 (high similarity
to functionally studied protein)"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     of
n
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           /locus_tag="PA4405"
/note="Protein name confidence: Class 4 (homologs of
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                complement(4339. .5262)
/locus_tag="PA4404"
complement(4339. .5262)
/locus_pag="PA4404"
/note="Protein name confidence: Class 4 (homologs previously reported genes of unknown function, or similarity to any previously reported sequences)"
                                                                                                                                                                                                                                                               /product="glutamate N-acetyltransferase"
/protein_id="AAG07790.1"
/db_xref="GI:9950634"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      complement(1455. .4205)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              complement(1455. .4205)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            /gene="secA"
/locus_tag="PA4403"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       locus_tag="PA4405"
                                                                                                                                                                                                                                       /transl_table=11
                                                                                                                                                                                                     /codon_start=1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               SHEYVKINAEYRT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            /gene="secA"
```

80

9

16026

15966

120

100

15906

15846

160

140

```
GAACTCGACGCCGAGTTCCTCTGTGCTCCGCCGCGAACTCTATGTCAGCCCCGGGTTGTCG
                                                                                                                           15305 TACTACGACGATTCCAAGGCCACCAACGTCGGCGCCCCTGGCGGCGATCGAGGGGCTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 LeuGluLeuSerSerPheGlnLeuGluThrCysAspArgLeuAsnAlaGluValAlaThr
                                                                                                                                                                                                                                                                                                                                                                        LysLeuLeuProValGlyGluLeuLysIleArgGlyAlaHisAsnTyrSerAsnAlaLeu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           TyrTyrAspAspSerLysAlaThrAsnValGlyAlaAlaLeuAlaAlaIleGluGlyLeu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   PheHisAspLeuArgGluProValAlaArgPheCysArgAlaValValLeuLeuGlyArg
                AsnProProGluLeuAlaThrLeuArgAlaGlnTyrProGlnValGluValArgCysGly
                                         16145 AACCCGCCGGAGCTGGCCACCTGCGTGCCCAGTATCCGCAGTGGAAGTGCGTTGCGGC
                                                                       GluLeuAspAlaGluPheLeuCysSerAlaArgGluLeuTyrValSerProGlyLeuSer
                                                                                                                                                                                                                                           SerThrValThrThrLeuValGlyGluMetAlaValAlaAlaAspLysArgValAlaVal
                                                                                                                                                                                                                                                                                                  141 GlyGlyAsnLeuGlyThrProAlaLeuAspLeuLeuAlaAspAspIleGluLeuTyrVal
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       241 PheLysAlaPheGlyLeuIleGluGluAspGlyGlnLysTrpLeuAlaPheGlnPheAsp
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            AspalaGlyLeuIleAlaGlnAlaLeuGlyAsnAlaValProLeuValArgValAlaThr
                                                                                                                                                                                                                                                                                                                                                           161
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              261
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   361
                                                                                                                                                                                                                                         121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           15605
                41
                                                                      61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     321
                                                                                                16085
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            381
                                                                                                                                                                                                            g
                                                                                                                                                                                                                                                                    g
                                                                                                                                                                                                                                                                                                                          QQ
                                                                                                                                                                                                                                                                                                                                                                                                               á
                                                                                                                                                                                                                                                                                                                                                                                                                                           g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               qq
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             qq
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               염
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  셤
                                         g
                                                                      δ
                                                                                               g
                                                                                                                             ò
                                                                                                                                                      g
                                                                                                                                                                                    ŏ
                                                                                                                                                                                                                                         ο
                                                                                                                                                                                                                                                                                                  ò
                                                                                                                                                                                                                                                                                                                                                         οχ
                                                                                                                                                                                                                                                                                                                                                                                  g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           δŽ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              /product="hypothetical protein"
/protein_id="AAG07793.1"
/db_xref="61:9950637"
/translation="MLFAEAQRICRLQQLLESQLQPAARPYCHVASWRGGCLLLIIVTD
GHWATRLEXQORRLQAREFEANIAKILFKVQPTTSTQRAARRSLTLSAVAAENL
RESAEIVGNPRLREALERLASRAEKSRQE"
complement (5865. 6776)
                                                                                                                                                                                                                                                                                                                                                     /translation-"MIKQRTLKNIIRATGVGLHSGEKVYLTLKPAPVDTGIVPCRTDL
DPVVEIPARAENVGETTMSTTLVKGDVKVDTVBHLLSAMAGLGIDNAYVELSASEVPI
MOSAGEFVELIQSAGLÓBQEAAKKFTRIKREVSVEGDKRAYFVPPDGFKVSEEIDF
DHPVFRGRTQAGSTSTVKEVSRARTFGFMRDIEYLRSQNLALGGSVENAIVVD
ENRVLREDGLRYEDEFVKHKILDAIGDLYLLGNSLIGEFRGFKSGHALNNQLLRTLIA
DKDAMEVVTFEDARTAPISYRRPAAAV"
                                                                                                                                                                                                                         /locus_tag="PA4406"
/note="Protein name confidence: Class 1 (function
experimentally demonstrated in P. aeruginosa); Alt protein
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            /translation="MFELVDNIAQTAVIKVIGVGGGGGNAVNHMAKNNVEGVEFICAN
TADALAKNTARATVLQLGGVYTKGLGAGANPEVGRQAALEBERRISEVLEGADWYFIT
TGMGGGTGTGAAPT TAEVAREMGILTVAAVYTEPPEGRKRWGIADEGIRALESSVDS
LITIPNEKLLFILGTGAASLLAAFAKADDVLAGAVRGISDIIKRPGMINVDFADVKTVM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   SEMGMAMMGTGGASGPNRAREATEAAIRNPLLEDVNIQGARGILVNITAGPDLSLGEY
SDVGNIIEQFASEHATVKVGTVIDADMRDELHVTVVATGLGARLEKPVKVVDNTVQGS
AAQAAAPAQREQQSVNYRDLDRPTVWRNQSHGSAATAAKLNPQDDLDYLDIPAFLRRQ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              /locus_tag="PA4407"
/locus_tag="PA4407"
/note="rotein name confidence: Class 2 (high similarity
for functionally studied protein)"
/codon_start=1
/transl_table=11
                                                                                                                                                                                                                                                                                                              /product="UDP-3-0-acyl-N-acetylglucosamine deacetylase"
/protein_id="AAG07794.1"
/db_xref="GI:9950638"
  20
  or
             similarity to any previously reported sequences)"
 unknown function,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                24000
448
0
0
0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    /product="cell division protein Fts2"
/protein_id="AAG07795.1"
/db_xref="G1:9950639"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Length:
Matches:
Conservative:
Mismatches:
Indels:
 oţ
                                                                                                                                                                                  asmB"
genes
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Gaps:
                                                                                                                                                      /gene="lpxc"
/locus_tag="PA4406"
/note="synonyms: envA, complement(5865. .6776)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             complement(8124. .9377)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     complement(6889. .8073)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    (1-24000)
                                                                                                                                                                                                                                                                                                                                                                                                                                         complement(6889. .8073)
                                                                                                                                                                                                                                                                                                                                                                                                                                                           /gene="ftsz"
/locus_tag="PA4407"
reported
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            /gene="ftsA"
/locus_tag="PA4408"
                                                                                                                                                                                                                                                                       name: EnvA protein'
                         /codon_start=1
/transl_table=11
                                                                                                                                                                                                                                                                                     /codon_start=1
/transl_table=11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    (1-448) x AE004856
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                7.91e-138
2260.00
100.00%
100.00%
100.00%
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    /gene="ftsz"
                                                                                                                                                                                                                /gene="lpxC"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Percent Similarity:
Best Local Similarity:
Query Match:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Alignment Scores:
Pred. No.:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    US-09-701-229-2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        21
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    16205
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ..
9
                                                                                                                                                                                                                                                                                                                                                                                                                                            gene
                                                                                                                                            gene
                                                                                                                                                                                                 CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Score:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      õ
```

15726

200

15666

15606

220

15786

180

15486

260

15426

280

15366

300

15306

320

15246

340

15186

360

15126

380

à 셤 ò g ò 8

```
Alignment Scores:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Pred. No.:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                BASE COUNT
        gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               gene
                                                                                                                                                                                                                                                                                                                                                                                                                 gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ORIGIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Score:
BCT 19-JUL-2001
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     /protein_id="AAG45235.1"
/db_xref="G1:12007716"
/translation="MPMSLSQLFPQAERDLLIRELTLDSHGVRPVDLFLTVPGGHQDG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             RAHIADALIKGATAVAYEAEGAGELPPSDAPLIAVKCLAAQLSAVAGRFYGEPSRGLD
LIGVIGINGKISVSQLVAQALDLLGERCGIVGTLGTGFYGALESGRHTTPDPLAVQAT
LATLKQAGARAVAMEVSSHGLDQGRVAALGFDIAVFINLSRDHLDYHGSMEAYAAAKA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     KLFAWPOLRCRVINLDDDFGRRLAGEBQDSELITYSLTDSSAFLYCRRASPTARR
RSSIAAKQGLIRSPLLGRRNLSNLLAAVGALLGLGYPLGDILRTLPOLQGPYGRWQRL
GGGKPLVVVDYAHTPDALEKVLEALRPHAAARLLCLFGCGGDRDAGKRPLMAAIAER
LADBYLYTDDNPRTERSAAIIADIRKGFAAADKYTFLPSRGEAIAHLIASAAVDDVVL
LAGKGHEDYQEIDGVRHPFSDIEQABRALAAWEVPHA"
                                                                                                                                                                                                                                    5280 bp DNA linear BCT 19-JUL-20C Pseudomonas aeruginosa MurE (murE), MurF (murF), MraY (mraY), and AY008276 AY008276.2 GI:12007715
                                                                                                                                                                                                                                                                                                                                                                                                     Pseudomonas aeruginosa
Bacteria; Proteobacteria; Gammaproteobacteria; Pseudomonadales;
Pseudomonadaceae; Pseudomonas.
1 (bases 1 to 5280)
Azzolina, B.A., Yuan, X., Anderson, M.S. and El-Sherbeini, M.
The cell wall and cell division gene cluster in the Mra operon of
Pseudomonas aeruginosa: cloning, production, and purification of
active enzymes
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Submitted (02-03N-2001) Blochemistry, Merck Research Laboratories, 126 E. Lincoln Avenue, Rahway, NJ 07065, USA Sequence update by submitter on Jan 2, 2001 this sequence version replaced g1:10719753.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Research Laboratories,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                2 (bases 1 to 5280)
E1-Sherbeint, M. and Azzolina, B.
Pseudomonas aeruginosa mraY, murD, murE, and murF genes
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Direct Submission
Submitted (20-SEP-2000) Biochemistry, Merck R
126 E. Lincoln Avenue, Rahway, NJ 07065, USA
4 (bases 10 5280)
El-Sherbeint, M. and Azzolina, B.
Direct Submission
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Expr. Purif. 21 (3), 393-400 (2001)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    1. 5280—"Pseudomonas aeruginosa"
//coganisma-"Pseudomonas aeruginosa"
//mol_type-"genomic DNA"
/db_xref-"taxon:287"
                                                                                                                                                                          14945 GCCAAAGCCGTAGAGGAGCTAGCG 14922
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   3 (bases 1 to 5280)
El-Sherbeini, M. and Azzolina, B.
                                                                                                                                                        441 AlaLysAlaValGluGluLeuAla 448
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  /codon_start=1
/transl_table=11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     /product-"MurE"
                                                                                                                                                                                                                                                                                                                                                                                  .
Pseudomonas aeruginosa
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    /gene="murE"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Protein E
21178826
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         11281713
                                                                                                                                                                                                                                                                                                                                                                  KEYWORDS
SOURCE
ORGANISM
                                                                                                                                                                                                                                                                                        DEFINITION
                                                                                                                                                                                                                                                                                                                              ACCESSION
VERSION
                                                                                                                                                                                                                                                                                                                                                                                                                                                               REFERENCE
AUTHORS
TITLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             TITLE
JOURNAL
REFERENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 MEDLINE
PUBMED
REFERENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       TITLE
JOURNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              REFERENCE
AUTHORS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    TITLE
JOURNAL
                                                                                                                                                                                                                                  RESULT 2
AY008276
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           AUTHORS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       AUTHORS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               JOURNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  FEATURES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              REMARK
```

```
PLAAMTGSSGKTAVKEMIASILRTQAGDAESVLATRGNLNNDLGVPLTLLQLADQHRS
AVIELGASRIGEIAYTVELTRRHVAIITNAGTAHVGEFGGPEKIVERKGEILEGLAAD
GTAVLNLDDRAFDTWRARASGRPLLTFSLDRPODFRAADLORBARGCMGFRLQGVAG
EAQVOLNLLGRHNVANLALAAAAAHALVPLDGVAGALQALQPVKGRAVAQLTASGLR
VIDDSYNANPASMLAAIDILSGFSGRYVLVLGDMGELGSWAEQAHREVGAYAAGKVSA
LYAVGPLMAHAVQAFGATGRHFADQASLIGALATILIKGSRSAAMDKVVAAL
                                                                                                               /note="recombinant enzyme catalyzed the ATP-dependent addition of D-alanine-D-alanine to the UDP-N-acetylmuramyl-L-alanine-D-glutamate-m-Dap precursor"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         /translation="Milliaevioopykgegvpqvttrgilsvltalslslwigpwm
Triloipoigoavrnoeposhlskgyptmggalilitaliaevistlwiwvl
vytlegaigwyddyrnoeposhlskgyptmggalilitaliaevistlwiaevitetti
Ivpmiksveiolgifrvvltyfvivgssnavnifdgidgianptvwargalgifcyl
SGNKRaevilipnvpeagelivfcalivgacheristlappycymygalaigaa
igtiavivargeivethggvpwartsvmigyasfklygrappycalaigaa
Dprvivrewiitviluiglatikir
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            FAREAKĀPIVĀTIGSNAKSTVTTLVGEMAVAADKRVAVGGNLGTPALDILADDIELYV
LELSSFOLETCOBRLANBVATVLNVSBEHDARVDRADATHRIRIERGARQVVVNRAD
ALTARDIJADOVPOKASPGLINKDPKARGILIEDGOKWIAFOPGKILPYGELKIRGAHNY
SNALAALALGHAVGLPFDAMLGALKAFGLAHRCOWVRERQGVSYYDDSKATNVGAAL
AABIGGLAGADIDGKLVLLAGGDGKGADFHDLRREPVARRCRAVVLLGRDAGLIAQALGNA
VPLYRVATLDBAVRQAAELARGDAVLLSPACASLDMFKNFEBRGRLFAKAVEELA"

1181 c 1759 9 923 t
                                                                                                                                                                                                                                                                                                                               /translation="MLEPLRLSQLTVALDARLIGEDAVFSAVSTDSRAIGPGQLFIAL
SGPRFDGHDYLAEVAAKGAVAALVEREVADAPLPQLLVRDTRAALGRLGALNRRKFTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        /protein_id="AaG45237.1"
/db_xref="G1:12007718"
/translation="MSLIASDHFRIVVGLGKSGMSLVRYLARRGLPFAVVDTRENPPE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    LATLRAQY PQVEARCGELDAEFLCSARELY VSPGLSLRTPALVQAAAKGVRISGDIDL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    /note="phospho-N-acetylmuramoyl-pentapeptide translocase"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                /note="UDP-N-acetylmuramyl-L-alanine:D-glutamate ligase; recombinant enzyme catalyzed the APP-dependent addition of D-glutamate to the precursor sugar peptide" /codon_start=1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              20
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           MetSerLeuileAlaSerAspHisPheArgIleValValGlyLeuGlyLySSerGlyMet
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          5280
446
0
2
0
0
0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Length:
Matches:
Conservative:
Mismatches:
Indels:
                                                                                                                                                                                                                                                   /product="MurF"
/protein_id="AAG45236.1"
/db_xref="GI:12007717"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        /protein_id="AAG22121.1"
/db_xref="GI:10719754"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Gaps:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           US-09-701-229-2 (1-448) x AY008276 (1-5280)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  /codon_start=1
/transl_table=11
                                                                                                                                                                                                                           /transl_table=11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     /product-"MraY"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  /product="MurD"
                                                                                                                                                                                                   /codon_start=1
/gene="murF"
1457
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             2833. .3915
/gene="mray"
2833. .3915
/gene="mray"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            3929. .5275
/gene="murD"
3929. .5275
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        6.67e-138
2249.00
99.55%
99.55%
                                                              1457. .2833
/gene="murF"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  3929. .5275
/gene="murD"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          CGSSEESH
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Percent Similarity:
Best Local Similarity:
Query Match:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      817
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ò
```

gene

CDS

```
complement(5744...6164)
/locus_tag="PP1327"
/note="This region contains a gene with one or more
/note="This region contains a gene with one or more
premature stops or frameshifts, and is not the result of a
sequencing artifact; conserved hypothetical protein,
degenerate; similar to GB:X16944, and SP:P15488;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                /product="conserved hypothetical protein TIGR00006"
/protein_id="AAN66952.1"
/protein_id="AAN66952.1"
/d=xxef="col:24982787"
/translation="WIDSGRHITVLLDEAVEALALRADGCYLDGTFGRGGHSRLIL
SKLGPQGRLLGFDKDPQAIATGQALAAEDGRFVIVQRSFAELGAEVAARGLHGKVSGV
ELDLGYSSPQLDDPERGFSFLNDGFDMNNPDDGVSAAEFTATAPVEEIARVFKEVG
EERFAGRWARAVVEREKQPFTRTADLAEVLKVANPAWEKGRNPATRAFQGLRIHVNN
ELGDLEAGLERALDALEVGGRLAAVISFHSLEDRIVKLEWRKLVKGEADNLPRNLPVQH
                                                                  IEAWVKQHPDHPAAQQLPLALTKLKELASQPLTKIALLLPQEGPLAGYARALRDGFWA
AHFQAQQSGQPAPAVQVFDSSRIGSLDDFYRQAQAAGVQLVIGPLEKPLVKQLAAKPQ
LPITTLALNYADAGQKAPPQLFQFGLAAEDEAREVARRARADGWVRAVALVPSGEWGD
                                                                                                                                                        RVLAAFRQDWBGNGGTLLAAERTAQPVALAQQIADLFQLRQSEGRAKSLGSTVGGSIA
APSBRRQDIDDFILLASTPQQAQQIKPULRQYABQDVPVATSNLXSASGDINQYNDMN
GIRFCETPWILLDTSNSLRQOVVQOWPQAAGSLGRLXAAGVDAYSLAPRLGQLKALPDN
RVLGLSGSLSINANQRVERQLPWAEFSGGQVKRLPDTVR"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                      /codon_start=1
/transl_table=11
/transl_table=11
/product="tetrapyrrole methylase family protein"
/protein_id="aaN66950.1"
/protein_id="aaN66950.1"
/boxeref="doi:24982784"
/translation="kaVATPD/RGASKSTVGTLYVVATPIGNLDDMSARALKVLADVAL
IAAEDTRHSIRLLQHFGIDTPLAACHEHNERDEGGRPLSKLLAGENVALVSBAGTPLI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 SDPGYHLVRQARAAGVSVVPVPGACALIAALSAAGLPSDRFIFEGFLPAKQAGRRARL
EQVREEPRTLIFYEAPHRILECLEDMEAVFGGDRPALLARELTKTFETLKGLPLAELR
AFVAGDSNQORGECVVLVGGWSAPEGEQAISAEAQRVLDLLLAELPLKRAAALAAEIT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       /product="conserved hypothetical protein TIGR00242"
/protein_id="aAN66951.1"
/db_xref="G1:24982786"
/translation="MMGITAVFRGANAVSLDARGRLAMPSRYRDELDSRCNGQLIVTI
DAVDPCLCVYPLDEMEGIEAKLRALPSELREBRRELGRIGHNYDLELDGSGRRELYPP
RIREYAKLDKKAMIVGQLNKFQLWDEDAWNAVSAADLAAIQQPGAMPDELRDLIL"
                                         PLLGGQAASTNNDAIWALVASLPAEQLQQPTNDQTLAGWTSLAFAVKSAGTLEQQQAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           7869. 78162
/gene="ftst"
/locus_tag="ppl330"
/note="similar to GB:M1186, GB:M62611, SP:P01178,
PID:189411, PID:386991, and PID:825699; identified by
sequence similarity; putative"
                                                                                                                                                                                                                                                                                                                                                                          /locus_tag="PP1326"
/note="identified by match to PFAM protein family HMM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           /locus_tag="PP1328"
/note="identified by match to PFAM protein family HMM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     /locus_tag="PP1329"
/note="similar to GP:9950652; identified by sequence
similarity; putative"
                                                                                                                                                                                                                                                                                                                /locus_tag="PP1326"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               6455. .6928
/locus_tag="PP1328"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       GVRKNLLYQLALEKQKAE"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 /locus_tag="PP1330"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               6925. .7872
/locus_tag="PP1329"
6925. .7872
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       /codon_start=1
/transl_table=11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              /codon_start=1
/transl_table=11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     7869. .8162
/gene="ftsL"
                                                                                                                                                                                                                                                                                                                                                                                                                                         PF00590"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       PF02381"
                                                                                                                                                                                                                                                                                          gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                               /translation="MKCASFKEPLMNSSRPYLVRALYEWIVDNDCTPHMLVNAEFPKV
QVPDGFASDGQIVLNISPSAVRSLHMDNDAVSFEGRFSGVAHSLFVPVGAILGIYARE
NGQGWYFELEPSSMDGDELEDDDVQPDDDGPPDDGGQPPRPTGRPSLKVVK"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          /translation="wippmricimalficlsviccssvijstrnspieddrgtrigsk
IDDSLIETKAAVNISKANPNLDKGSHIVVSSYNGIVLLAGQTPRADLKSLAEQTASQV
QRVKKVHNELQVMQPSSILARNNDAWLTTKIKTQMLTDSAVPSSRIKVITENGIVYLL
GLVTRQEANSATAVVQGVSGVQKIVKLFEXID"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                /translation-"MOSRIRRLFEASIETKOQAMDILAPHIEQASLVMVNALLNEGKM
LACGNGGSAGDAQHFSSELLNRFERRFRSLPAIATTDSSTLTSIANDYSYNEYFSKQ
IRALGOPGDVLLASTSGNSANVIQAIQABHDREMIVVALTGRDGGGMASLLLPEDVE
IRVPSTVTARIQEVHLLAIHCLCDLIDSQLFGSEE"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             /product="conserved hypothetical protein rigr00252"
/protein_id="AAN66948.1"
/protein_id="AAN66948.1"
/d_xref="G1:249487878"
/translation="MAAASPTRAGOAAETQALEYLOGOGIQLLARNWRCKGGELDLV MLDADTVVFFEVRYRLHAGFGGALDSIDGRKQKRLVLAATLFLQKEAHWGNYPCRFDV
ORDWCALADTVLDPRSSEAARTEARKALRESLIGVSPLFSEFACFMSDEGSLVDCCLL
PILWRLPVLGIELPRQAKPLLDYMERQFAREPFQASLSSVEREMRKL"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             /translation="MIACLRILTALCLAALLAACASSPSSSIGELPRTPDASIEQLLE
KAASSKSAEDAALLRLSAADLAYKQKDFPRAARILEGVPLDTIKPAQQVFASTLAAEL
                                                                                                                                                                                                              /locus_tag="pp1321"
/note="similar to GB:S50157, GB:X60221, SP:P24539, and
PID:509291; identified by sequence similarity; putative"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        /gene="gmhA"
/locus_tag="PP1323"
/note="identified by match to PFAM protein family HMM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  complement(2471. .2845)
/locus_tag="PP1324"
/note="identified by match to TIGR protein family HMM
TIGR00252"
                                                                                                                                                                                                                                                                                                                                                                      /product="stringent starvation protein B"
/protein_id="AaN66945.1"
/db_xref="G1:24982778"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          /product="phosphoheptose isomerase"
/protein_id="AAN66947.1"
/db_xref="GI:24982780"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    /codon_start_1
/transl_table=11
/product=11poptein, putative"
/protein_id=AAN66946.1"
/db_xref="G1:24982779"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          /product="lipoprotein, putative"
/protein_id="AAN66949.1"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     complement (1216, 1794)
/locus_tag="pp1322"
complement (1216, 1794)
/locus_tag="pp1322"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  /gene="gmhA"
/locus_tag="PP1323"
complement(1791. .2378)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  /locus_tag="PP1325"
complement()?".
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        complement(2471, .2845)
/locus_tag="PP1324"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           complement(2842, 4659)
/locus_tag="PP1325"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      complement(1791. .2378)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         VALQGSHHAGRPLQWLKNAFEC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   'db_xref="GI:24982783"
                                                                                                                           10cus_tag="PP1321"
                                                                                                                                                                                                                                                                                                                                             /transl_table=11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    /codon_start=1
/transl_table=11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             /transl_table-11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              'transl_table=11
                                                                                                                                                                                                                                                                                                             /codon_start=1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             /codon_start=1
                                                                                               /gene="sspB"
                                                                                                                                                                                        'gene="sspB"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    PF01380"
```

gene

CDS

gene

gene

1, 114 - 1, 108	14743 CGCGAATTCGGTGGCCTCGCCCACCGGTGCCAGTGGGTACGCGAGCGTAATGGCGTGAAC 14802 321 TyrTyrAspAspSerLysAlaThrAsnValGlyAlaAlaLeuAlaAla1leGluGlyLeu 340 :::		AspalaglyLeuIleAlaglnAlaLeuGlyAsnAlaValProLeuValArgValAlaThr           GATGCCGAGCGCCTGGCCGATGCCGATGCCGACGACGACGACGACGGGTCAAGACG	401 LeuAspGluAlaValArgGlnAlaAlaGluLeuAlaArgGluGlyAspAlaValLeuLeu 420         :::	SerProAlaCysAlaSerLeuAspk 		471/c TION	ION N DS	_	<pre>REFERENCE 1 (Dases 1 to 311600) AUTHORS Buell, R., Joardar, V., Khouri, H., Fedorova, N., Tran, B., Russell, D., Berry, K., Utterback, T., Van Aken, S., Feldblyum, T., Gwinn, M., Dodson, R., DeBoy, R., Durkin, A., Kolonay, J., Madupu, R.,</pre>		<pre>REFERENCE 2 (bases 1 to 311600) AUTHORS Buell, Tr., Joardar, V., Khouri, H., Fedorova, N., Tran, B., Russell, D., Berry, K., Utterback, T., Van Aken, S., Feldblyum, T., Gwinn, M., Dodson, R., DeBoy, R., Durkin, A., Kolonay, J., Madupu, R.,</pre>	Daugherty, S., Brinkac, L., Beanan, M., Haft, D., Selengut, J., Nelson, W., Davidsen, T., White, O., Fraser, C. and Collmer, A. TILLE Direct Submission JORNAL Submitted (03-MAR-2003) The Institute for Genomic Research, 9712	Medical C		<pre>gene 131601 /gene="bfr" /locus_tag="PSPTO4160" CDS 131601</pre>	/gene="bfr" /locus_tag="PSPTO4160" /note="similar to SP:P22759, and SP:P22759; identified by
20 13902 40 60 13962 60 14082 100 14142 120 14262 120 14322 140 14322 120 14442 120 14502 1462 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 14682 1	9a Ay	Qy	QQ QQ	Qy Qa	oy Og	oy D	RESUL AE016 LOCUS DEFIN	ACCI VERS	io	REFI		REF!	μ̈́́	FEA			
		5	2	2	2	8	2	7	2	7	2	2	8	2		Ο.	
	1.11e-108 Length: 30199. 1835.00 Matches: 35 88.62% Conservative: 35 80.80% Mismatches: 51 81.19% Indels: 0	lyMet 	rgGlu       GCGAG	ysgly        Greer	euSer   :::  TGGCC	pile       CATA	aLys        CAAG	laval 	rval 	laThr        GACC	steu 		oAsp 		aLeu        CCTG		pheSerGlyLeuAlaHisArgCysGlnTrpValArgGluArgGlnGlyValSer 320 

gene

gene

```
/product-"ybak/ebsc protein"
/product-"ybak/ebsc protein"
/db.xref-"G1:2854559"
/translation-"wtpaldilkknraehrihsyehdpkaasygleaaeklgidaary
/translation-"wtpaldilkknraehrihsyehdpkaasygleaaeklgidaary
Progrekerlyavybyvgtldikalanaaakkremadpaaagrsilkgis
Plogrekelryteidersirysagrrgleveltaavlaehtgarpapigre"
6918. 7775
                                   IRTYAHDNLTEFAANSRVPVINGLSDDLHPCQLLADMQTFLEHRGSIKGKTVAWIGDG
NNMCNSYIEAAIQFDFQLRVACPAGYEPNPEFLALAGERVTVVRDPKAAVAGAHLVST
DVWTSMGQEEETARRKALFAPFQVTRALLDLADKDVLFWHCLPAHRGEEISVDLLDDA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         /protein_1d="AAO57621.1"
/db_xref="GI:28854558"
/translation="MLLNLRNLACGYQNQRVVQDLNLHLNAGDIGCLLGSSGCGKTTT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   LRAIAGFEPTHAGEITLAGDVISRPGWTLAPERRRIGWFODYALFPHLSVADNIAFG
IRQHPRLDQVIGELLELVNLGALGKRYPHELSGGQQQRVALARALAPEPQLLLLDEPF
SNLDGELRRRLSHEVRDILKARGTSAILVTHDQEEAFAVSDHVGVFKEGRLEQWDTPY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               /translation-"MTIALKOPTLTGQCVAEFLGTALMIFFGTGCVAALKVAGATFGL
WEICIIWGMAVSWGTYLSAGISGAHLNPAVSIALSLEAGFERRKLPPYISAQIAGAFC
GGLVYLLI SLFFDFEHAHHIIRGSEQSLELASVESTYPNPAISVGQAFLVEVVITT
ILMGVIMALGDDNNGLPRGALAPLLIGLLVAVIGSAMGPLTGFAMNPARDFGFKLMTF
FAGWGEIAFTGGRDIPYFLVPIFAPILGACLGAAGYRALIARHLPSTVTVENEKEAPV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                /translation="MTDTQNKNYIIALDQGTTSSRAIIFDRDANVVSTAQSEFVQHYP
QAGWVEHDPWEIFATQTACMTKALAQADLHHOLDAAGITHORRTTV WERDYCRPIY
NATVWQCRRSTEICQQLKROELEEYIKDTTGLVLDPYFSGSKVWILDHVBGSRERAR
KGELMFGTIDTWLIWKFTGGKVHVTDYTNASRTMLFNIHTLEWDGNMLDVLDIPREIL
   JGMIFEKSSTRTRLSFEAGMIQLGGQAIFLSHRDTQLGRGEPIADSAKVISRMLDAVM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 NLYHEPQTPFVASFIGQGYFIRGQMIEPESVHTELGVLRGNRAYPGVRGSAVDVLLRP
DDIVYAPDSDLKARVIGRTFKGASTLYRLQLPTGSQLEAIFPSHADHRQGEEVGIRVA
                                                                                                                                                                                                /locus_tag="PSPT04165"
5026...6087
/locus_tag="PSPT04165"
/note="similar to GB:248042, SP:Q14444, and PID:662994;
identified by sequence similarity; putative"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  match to PFAM protein family HMM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       complement(6096. .6566)
/locus_tag="PSPT04166"
complement(6096. .6566)
/locus_tag="PSPT04166"
/locus_tag="PSPT04166"
/locus_similar to SPPP21484; identified by sequence similarity; putative"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 /locus_tag-"PSPT04167"
/note="similar to SP:P11244; identified by sequence
similarity; putative"
                                                                                                                                                                                                                                                                                                                                                                                                                                                   /transi_table=11
/product="ABC transporter, ATP-binding protein
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 /product="glycerol uptake facilitator protein"
/protein_id="AAO57623.1"
/db_xref="GI:28854560"
                                                                                                                                                    RSVAWDQAENRLHAQKALLEFLVAPCFQPA"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               /product-"glycerol kinase"
/protein_id="AAO57624.1"
/db_xref="GI:28854561"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        7805. .9310
/gene="glpk"
/locus_tag="PSPTO4168"
/note="ldentified by mat
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       /locus_tag="PSPTO4167"
6918. 7775
/gene="glpF"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 locus_tag="PSPTO4168"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ADHLVLFAAQGSVAAYAAG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              /codon_start=1
/transl_table=11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            /codon_start=1
/transl_table=11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  /codon_start=1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   /gene="glpF"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  7805. .9310
/gene="glpK"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   VRGKVQASS"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     PF02782"
                                                                                                                                                                                            gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        gene
                                                                                                                                                                                                                                                              CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           complement (1104. .3302)

/locus_tag="PSPT04162"
complement(1104. .3302)

/locus_tag="PSPT04162"
/locus_tag="PSPT04162"
/locus_tag="PSPT04162"
/locus_tag="PSPT04162"
/locus_tag="PSPT04162"
/locus_tag="PSPT04162"
/codon_start=1
/trans1_table=11
/product="valdoreductase, molybdopterin-binding"
/product="valdoreductase, molybdopterin-binding"
/protein_id="AA057618.1"
/pro
                                                                                                     /product-"bacterioferritin"
/protein_id-"AAO57616.1"
/db_xref-"G1:28884553"
/fb_xref-"G1:28884553"
/translation-"KGDITVIOHLNKILGNELVAINQYFLHARMYEDWGLKKLGGHE
YKESIHAMKYADKLIKRTLFLEGLPNLQDLGKILIGEHTKEMLECDLKIEQKGLADLK
AAAAHFETVOPFGSRELLEDILEPKEEQIDWLETQLGLIVKVGIENYLQSQMGD"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             /translation="MDIIETIKEQIASNTILLYMKGAPNAPQCGFSAKASQALMACGE
KFAYVDILQNPEIRANLPKYANWPTFPQLWVAGELVGGSDIITEMMADGSLQTLVKEA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     /product="ornithine carbamoyltransferase"
/protein_id="AAO57620.1"
/db_xref="G1:28854557"
/translation="MNARHFLSMMDYTPDELLGLIRRGVELKDLRNRGVLFEPLKNRV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 /translation="MDSKEHQLFELLGLTARTLTHLTASMTSMSFELLRSEDEVTRNA GRRMIDRMATISSGLDEHWRLIGDLTGIHMAQEQVETVTEIQLQRKIVTPIGG"
                                                                                                                                                                                                                                                                                                                                                                                                complement(689, 1015)
/locus_tag="PSPT04161"
/note="identified by match to TIGR protein family HMM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                /locus_tag="PSPT04164"
/note="identified by match to PFAM protein family HMM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                /product-"conserved hypothetical protein"
/protein_id="AAO57619.1"
/db_xref-"GI:28854556"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 complement(3357. 3650)
/locus_cag="PspTr04163"
complement(3357. .3650)
/locus_tag="PspTr04163"
/note="ladentfiled by Gl1mmer2; putative"
/codon_start=1
/transl_table=11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            /transl_table=11
/product="guldaredoxin-related protein"
/protein_id="AAO57617.j"
/db_xref="GI:28854554"
sequence similarity; putative"
                                                                                                                                                                                                                                                                                                                                 complement(689. .1015)
/locus_tag="PSPTO4161"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           /locus_tag-"PSPT04164"
4100. .5020
                                       /codon_start=1
/transl_table=11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  /codon_start=1
/transl_table=11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                /codon_start=1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            4100. .5020
/gene="argF"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      4100. .5020
/gene="argf"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     TIGR00365
```

gene

gene

σ

```
291073
                                                                                                                                                                                                                                                                            290773
                                                                                                                                                                                                                                                                                                                               290713
                                                                                                                                                                                                                                                                                                                                                                                  290653
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            30-APR-2003
complete
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Bacteria, Protecobacteria, Gammaproteobacteria, Legionellales;
Coxiellaceae; Coxiella.

[ (bases 1 to 301727)
[ seshadri.R., Paulsen, T.T., Eisen, J.A., Read, T.D., Nelson, K.E.,
Nelson, W.C., Ward, N.L., Tettelin, H., Davidsen, T.M., Beanan, M.J.,
DeBOY, R.T., Daugherty, S.C., Brinker, L.M., Madupu, R., Dodson, R.J.,
Thompson, H.M., Lee, K.H., Carty, H.A., Scanlan, D., Heinzen, R.A.,
Thompson, H.A., Samuel, J.E., Fraser, C.M. and Heidelberg, J.F.
Complete genome sequence of the Q-fever pathogen Coxiella burnetii
Proc. Natl. Acad. Sci. U.S.A. 100 (9), 5455-5460 (2003)
                                                                                                                                                                                                                                                    360
                                                                                                                                                                                                                                                                                                                                                                                                                                                               440
                                                                                                                                                                                                340
                                                                                                                                                                                                                                                                                                       380
                                                                                                                                                                                                                                                                                                                                                        400
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           2 (bases 1 to 301727)
Seshadri,R., Paulsen,I.T., Eisen,J.A., Read,T.D., Nelson,K.E.,
Seshadri,R., Paulsen,I.T., Eisen,J.A., Read,T.D., Nelson,K.E.,
Seshadri,R.C., Ward,N.L., Tettelin,H., Davidsen,T.M., Beanan,M.J.,
DeBoy,R.T., Daugherty,S.C., Brinkac,L.M., Madupu,R., Dodson,R.J.,
Khouri,H.M., Lee,K.H., Carty,H.A., Scanlan,D., Heinzen,R.A.,
Thompson,H.A., Samuel,J.E., Fraser,C.M. and Heidelberg,J.F.
Direct Submission
Submitted (04-APR-2003) The Institute for Genomic Research, 9712
Medical Center Dr., Rockville, MD 20850, USA
                                                                                                                                                                                                                                                                                                                                                        PheHisAspLeuArgGluProValAlaArgPheCysArgAlaValValLeuLeuGlyArg
                                                                                                                                                                                                                                                                                                                                                                                                                        GITCAGGCGGCTGCCGAGCGCCGAGCTGGCTCAGCGCGGCGAIGCCGTGCTT
                                                                                         AlaalaLeuAlaLeuGlyHisAlaValGlyLeuProPheAspAlaMetLeuGlyAlaLeu
                                                                                                                                               LysAlaPheSerGlyLeuAlaHisArgCysGlnTrpValArgGluArgGlnGlyValSer
                                                                                                                                                                                                TyrTyrAspAspSerLysAlaThrAsnValGlyAlaAlaLeuAlaAlaIleGluGlyLeu
                                                                                                                                                                                                                                                    GlyAlaAspIleAspGlyLysLeuValLeuLeuAlaGlyGlyAspGlyLysGlyAlaAsp
                                                                                                                                                                                                                                                                                                                                TTCAGCGGCCTGCGTGCCCCGTGGCTAAATACTGCCGCGCTGCGGTGTTGCTGGGTCGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                               SerProAlaCysAlaSerLeuAspMetPheLysAsnPheGluGluArgGlyArgLeuPhe
                                                                                                                                                                                                                                                                                                                                                                                                           LeuAspGluAlaValArgGlnAlaAlaGluLeuAlaArgGluGlyAspAlaValLeuLeu
                                      LysLeuLeuProValGlyGluLeuLysIleArgGlyAlaHisAsnTyrSerAsnAlaLeu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            BCT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        of
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             linear
of 7 o
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             bp DNA 1
493, section 1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                AlaLysAlaValGluGluLeuAla 448
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            301727 |
strain RSA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Coxiella burnetii RSA 493
Coxiella burnetii RSA 493
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  AE016960 AE016828
AE016960.1 GI:29540626
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Coxiella burnetii
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             AE016960
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          genome
                                                                                           281
                                                                                                                                               301
                                                                                                                                                                                                  321
                                                                                                                                                                                                                                                    341
                                                                                                                                                                                                                                                                                                       361
                                                                                                                                                                                                                                                                                                                                                          381
                                                                                                                                                                                                                                                                                                                                                                                                              401
                                                                                                                                                                                                                                                                                                                                                                                                                                                               421
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  441
              291132
                                                                                                                     291012
                                                                                                                                                                                                                          290892
                                                                                                                                                                                                                                                                             290832
                                                                                                                                                                                                                                                                                                                                290772
                                                                                                                                                                                                                                                                                                                                                                                  290712
                                                                                                                                                                                                                                                                                                                                                                                                                                      290652
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         290592
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          290532
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               AE016960
LOCUS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          DEFINITION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ORGANISM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           TITLE
JOURNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       TITLE
JOURNAL
PUBMED
REFERENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ACCESSION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               VERSION
KEYWORDS
SOURCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            REFERENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        AUTHORS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            AUTHORS
                                       Ω
                                                                q
                                                                                         ò
                                                                                                               셤
                                                                                                                                               ò
                                                                                                                                                                    g
                                                                                                                                                                                                δ
                                                                                                                                                                                                                       g
                                                                                                                                                                                                                                                    ö
                                                                                                                                                                                                                                                                        g
                                                                                                                                                                                                                                                                                                      δ
                                                                                                                                                                                                                                                                                                                               g
                                                                                                                                                                                                                                                                                                                                                          à
                                                                                                                                                                                                                                                                                                                                                                              g
                                                                                                                                                                                                                                                                                                                                                                                                            ŏ
                                                                                                                                                                                                                                                                                                                                                                                                                                     g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           염
                                                                                                                                                                                                                                                                                                                 291193
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  291253
PEVKSSSEVYGHSKSGIPIAGIAGDQQAALFGQMCVEPGQAKNTYGTGCFLLMNTGKK
AVKGAHGMLTTIGCGPRGEVAYALEGAVFNOGSTVQMLRDELKLINDALDTEFFAGKV
KDSNGVYLVPAFTGLGAPYMDPYARGALFGLTFRGVVDHIIRAALESIAYQTRDVLDA
MQQDSGERLKSLRVGGAVANHELMGFQADILGTHVERPONRETTALGAAFLAGGAIG
FWSSLDELRNKAVIERVFEPACEBAHREKLYAGWQKAVARTRDWEPHENEE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    140
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            200
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ThrArgProLeuIleAlaAspThrValProCysTrpSerPheGlyLeuAsnLysProAsp 240
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             LeuArgThrProAlaLeuValGlnAlaAlaAlaLysGlyValArgIleSerGlyAspIle 100
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      PheLysAlaPheGlyLeuIleGluGluAspGlyGlnLysTrpLeuAlaPheGlnPheAsp 260
                                                                                                                                                                                                                                                                                                                                                                      40
                                                                                                                                                                                                                                                                                                                                                                                                                                                                            80
                                                                                                                                                                                                                                                                                                                                                                                                                        9
                                                                                                                                                                                                                                                                                                                                                                                    ValLeuAsnValSerGluAspHisMetAspArgTyrAspGlyMetAlaAspTyrHisLeu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      SerLeuValArgTyrLeuAlaArgArgGlyLeuProPheAlaValValAspThrArgGlu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     GlyGlyAsnLeuGlyThrProAlaLeuAspLeuLeuAlaAspAspIleGluLeuTyrVal
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       LeuGluLeuSerSerPheGlnLeuGluThrCysAspArgLeuAsnAlaGluValAlaThr
                                                                                                                                                                                                                                                                                                                                                                                                                        AsnProProGluLeuAlaThrLeuArgAlaGlnTyrProGlnValGluValArgCysGly
                                                                                                                                                                                                                                                                                                                                                                                                                                                                           GluLeuAspAlaGluPheLeuCysSerAlaArgGluLeuTyrValSerProGlyLeuSer
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  SerThrValThrThrLeuValGlyGluMetAlaValAlaAlaAspLysArgValAlaVal
                                                                                                                                               by sequence
                                                             9421. .10176
/gene="glpR"
/locus_tage="pspr04169"
9421. .10176
/gene="glpR"
/locus_tage="pspr04169"
/locus_tage="pspr04169"
/note="similar to SP: Q51391; identified by similarity; putative"
                                                                                                                                                                                              311600
353
47
48
0
                                                                                                                                                                                                Length:
Matches:
Conservative:
Mismatches:
Indels:
                                                                                                                                                                                                                                                                                          (1-311600)
                                                                                                                                                                                                                                                                 Gaps:
                                                                                                                                                                                                                                                                                          x AE016871
                                                                                                                                                                                              2.86e-108
1829.00
89.29%
78.79%
80.93%
                                                                                                                                                                                                                                                                                        US-09-701-229-2 (1-448)
                                                                                                                                                                                                                          Similarity:
                                                                                                                                                                                   Alignment Scores:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       161
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             81
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           291492
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          181
                                                                                                                                                                                                                                                                                                                                                                      21
                                                                                                                                                                                                                                                                                                                                                                                                                        41
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     141
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                291372
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               201
                                                                                                                                                                                                                                                                                                                                                                                               291792
                                                                                                                                                                                                                                                                                                                                                                                                                                                 291732
                                                                                                                                                                                                                                                                                                                                                                                                                                                                           61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   291672
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 101
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          291552
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             291432
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     291312
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         291252
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   221
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           291192
                                                                                                                                                                                                                                                 Query Match:
DB:
                                                                                                                                                                                                                        Percent Sim
Best Local
                                                                                                                                                                                                  Pred. No.:
                                                                  gene
                                                                                                        CDS
                                                                                                                                                                                                             Score:
                                                                                                                                                                                                                                                                                                                                           셤
                                                                                                                                                                                                                                                                                                                                                                                          g
                                                                                                                                                                                                                                                                                                                                                                                                                      ò
                                                                                                                                                                                                                                                                                                                                                                                                                                         q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           οy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          õ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      쉽
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ò
                                                                                                                                                                                                                                                                                                                  ò
                                                                                                                                                                                                                                                                                                                                                                     à
```

```
/translation-"MSVSAPQKYDSSTIKVLKGLDAVRKRPGMYIGDTDDGSGLHHMV
FRVUNSIDBALAGFCSHIWTIHADGSVSVRDMGGIFTDIHBEGRSAAEVIWTVL
FRGSREDKMXKVSGLHGVOISVVMALSEELWIIRQNGNYTQTXKMGAPALAV
TGKSDKTGTEIRFKPSNAIFSNTEFHYDILAKRLRELAFLNLGVRIELTDERSGRGDI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        IRTLLLTFFYROMPELIERGHIYIAOPPLYKVKKSKOEGYVKDDLALDALLGLALDG
AQFHPTPQAPAIQGSALENLAAHYRTAMRSINRLGKRYPLYILKRLLNFPPLTVADLS
BEEKVTAWTORLEBOLNRPKTENSLRYQTAIKKDAERRELYLPWYTINBIAQOHLFH
OEFFGCADYRHLVDLYNKISGLIEPGAYIVRNDKRRTVTHFGEALEWFIEEGKKGLNI
QRYKGLGEMNPDQLWETTMDRESRRLLSVSIEDAVWADEIFTTLMGDQVEPRRLFIED
NALAVENLDV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          /Translation="MKDIKILGVDIAKDVFQLCGIDEWGKVIYTRRVKRAQYVSTVAS
LKVGCVVMEACGGANHWYRTFWGWGIPTQLISPQHVKPYVKSNKNDRNDAQAIAEAAS
LKVGCVVMEACGGANHWYRTFWGWIPTQLISPQHVKPYVESNKNDRNDAQAIAEAAS
EASMRFVGEKTVEQODVQALLKIRDRLVKSRTALINEIRGLAGSGELKAVARANEDCQRKYE
ELPLILASGKTVEQODVQALLKIRDRLYFELLNRDETGDYSEELKAVARANEDCQRVQSI
PGVGYLTALSYVASVOGJHQPHRSRQLSAFIGLVPRQHSSGNREVLLGISKRGNVWLR
TLLIHGARALLRHVKNKTDKKSLWLKALIERRGMNRACVALANKNAPIIWALLTRQET
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        FEYEGGIKAFVEHLNKKKTPIHSDVFHFSTEKNDIVVEVAMQWNDGFQETIFCFTNNI
PQNDGGTHLAGFRAALTRTLNNYIEGEALAKKSKVTISGDDTREGLIVVLSVKVPDPK
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     FSSQTKDKLVSSEVKPVVESTVAKQLHDYLLENPKQARI IAMKVIDAARAREAARKAR
DWTRRKNVLDLGGLPGKLADCQEKDPALCELFLVBGDSAGGSAKQARDRRYQAILPLK
GKILNVEKARFDKMLSSAEVGTLITALGCGIGKEEYNPDKLRYHRI ILMTDADVDGSH
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               /translation="MAHYDAVFKGWVHFIGLLVENLHFQSHPLVGNDMGSFPLEGSDS
GSFYFYLELGGLLNVQILHR"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      'translation-"MKKEYDFSKAKKNPYAKGLKKQVTIRLDAETINYFKRLAEDSNI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           /locus_tag="CBU00006"
/note="similar to PIR:A42937, GB:X66899, GB:X72990,
GB:X72991, GB:X72991, GB:X72991, GB:X72995, GB:X72996, GB:X72996, GB:X72996, GB:X72996, GB:X73000, GB:X73001, GB:X73001, GB:X73001, GB:X73001, BB:X73001, BB:X73001, GB:X73004, BF:O01844, PID:1572086, PID:1666068, PID:31280, and PID:825654; identified by sequence similarity; putative"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         complement(8186..8398)
/locus_tag-"CBU0007"
complement(8186..8398)
/locus_tag-"CBU0007"
/note-"identified by match to PFAM protein family HWM
                                                   identified by match to PFAM protein family HMM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    /transl_table=11
/product"-conserved hypothetical protein"
/protein.id="AAO89577.1"
/db_xref="GI:29540633"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    complement(6528. .6722)
/locus_tag="CBU0005"
/locus_tag="CBU0005"
/locus_tag="CBU0005"
/locus_tag="CBU0005"
/note="identified by Glimmer2; putative"
                                                                                                                                                                                                                      subunit.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        /transl_table=11
/product="hypotchetical protein"
/protein.id="AA089575.1"
/db_xref="GI:29540631"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           /product="IS1111A, transposase"
/protein_id="AA089576.1"
/db_xref="GI:29540632"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         PYOMLINLYLRECAKKHKKLNISWEK
                                                                                                                                                                                                                 /locus_tag="CBU0004"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            6759. .7778
/locus_tag="CBU0006"
6759. .7778
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 /locus_tag="CBU0008"
8716. .8904
                                                                                                                                                                               /transl_table=11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     /transl_table=11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          /codon_start=1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          /codon_start-1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 /codon_start=1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       PF01402"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     /codon_start-1
/transl_table-11
/product-"Data polymerase III, beta subunit"
/product-"Data polymerase III, beta subunit"
/product-"Data polymerase III, beta subunit"
/protein_id="AAO89572.1"
/db_xref="GI:29540628"
/translation-"WKLNLREFLLKPLQLVIGVVERKQTLPILSNVLLSIETDQLSI
/translation-"WKLNLREFLLKPLQLVIGVVERKQTLPILSNVLLSIETDQLSI
/translation-"KRTLLREGGREDGERALPOSTFRHLLYRTHFAMAQQDVRYTLNGLL
/ETYPRKLSAIATDGHRLANNTLLVQTNTERRLQIIIPRKGITELLRLLEEDBALATI
RIGNNHIGVSTNDFTFTSKLIEGREPDGERVIPKGGDKGVIDRDILKOALSRTAILC
NEKRKGVRFPLRANDGLANDPGDERAEBELNIDTGENLDIGFNVGTVLDILNVVN
SCNIRLTESTADSSVLINEVENPSDSAFVVMPMRL"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         GKTHIMHAVGNAILKKDSSKKVLYLHSERFYADMIKALQHNANNEFKRFYRSLNALLI
DDIOFFAGKORSQEEFHTRNALLDGQQQIILTCDRYPKEINGLEERLQSRFGWGLTV
ALEPPELETRVAILMSKABQQCKVHLPHEVAFPFIAKHTGSNYRELEGARKYIANAHFT
GQSITVDFTRRALKDLTLQARLITIENIQKRVAEYYKIKVADLLARRRNRGYARPRQ
MAMALAKELTNHSLPEIGDAFGGRDHTTVLHACRKVKELLATSLDIILEDYKNLMRILS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 /translation="MSLPTSLWDKCLGYLRDEIPPQQYNTWIRPLHAIBSKQNGLLLL
APNRFVLDWINERFLNRITELLDELSDTPPQIRLQIGSRSTERPTKNSHEPSHRKAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           PPAGTTISHTQANINSNFTFDSFVEGKSNQLARAAATQVAENPGQAYNPLFIYGGVGL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  /protein_id="Aa689573.1"
/db_xref="G1:20540629"
/db_xref="G1:20540629"
/db_xref="G1:20540629"
/db_xref="G1:20540629"
/db_xref="G1:20540629"
/dcffsilesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesitylesityles
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           IMORLORSIKORNAALKAKLPLGEITHWDKMLVEDGERLHOIRONVYEEKPLFTOML
QOFLPAYPLIGHYFRGWSEKYSLMEQLOINLKQDLQRGYTOAGPQRADFRLTLGDLPA
ODISSGGGOKLYTYALHFAGGLLIKEKTGISPIYLIDDLPAELDANKRDCYIDLVNCL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  /product="chromosomal replication initiator protein DnaA"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  /locus_tsg="CBU0002"
/note="identified by match to PFAM protein family HMM
PF02767"
                                                                                                                                                                                                                                                                                                                                                                                                                                                    /locus_tag="CBU0001"
/note="identified by match to PFAM protein family HMM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              /locus_tag="CBU0003"
/note="identified by match to PFAM protein family HMM

    301727
    7organism-"Coxiella burnetii RSA 493"
/mol_type-"genomic DNA"
    /strain-"RSA 493"

                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ESQVFISGIDPNEIRLPPHSTLFHVKHGKVAAL"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    /protein_id="AA089571.1"
/db_xref="G1:29540627"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              /codon_start=1
/trans1_table=11
/product="recF protein"
                                                                                                                                                                                                    /db_xref="taxon:227377"
140. .1495
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    1639. .2748
/gene="dnaN"
/locus_tag="CBU0002"
1639. .2748
/gene="dnaN"
                                                                                                                                                                                                                                                                                                                            /locus_tag="CBU0001"
140. .1495
/gene="dnaA"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              /locus_tag="CBU0003"
2723. 3826
/gene="recf"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ocus_tag="CBU0004"
        Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                /codon_start=1
/transl_table=11
                                                                                                                                                                                                                                                    140. .1495
/gene="dnaA"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  2723. .3826
/gene="recF"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  1128. .6554
/qene="qyrB"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      4128. .6554
/gene="gyrB"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     PF03299"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        PF02463"
                                                                                                                                                                                                                                                        gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     CDS
FEATURES
                                                                                                                                                                                                                                                                                                                                                                           CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 CDS
```

201

221

251

```
118774 AAAACGTCTATTGCCTATCAGGGTAAGATTTTAATGCCCATCCAAGAATTAAAATTAAAAC 118833
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  AL627265 251050 bp DNA linear BCT 06-JUN-2002 Salmonella enterica serovar Typhi (Salmonella typhi) strain CT18, complete chromosome; segment 1/20.
AL627265 AL513382
AL627265.1 GI:16501283
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            1 (bases 1 to 251050)
Parkhill, J., Dougan, G., James, K.D., Thomson, N.R., Pickard, D., Wain, J., Churcher, C., Mungall, K.L., Bentley, S.D., Holden, M.T.G., Sebalhia, M., Baker, S., Basham, D., Brooks, K., Chillingworth, T., Connerton, P., Cronin, A., Davis, P., Davies, R.M., Dowd, L., White, N.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Salmonella enterica subsp. enterica serovar Typhi
Salmonella enterica subsp. enterica serovar Typhi
Bacteria; Proteobacteria; Gammaproteobacteria; Enterobacteriales;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     312 TrpValArgGluArgGlnGlyValSerTyrTyrAspAspSerLysAlaThrAsnValGly
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    332 AlaAlaLeuAlaAlaIleGluGlyLeuGlyAlaAspIleAspGlyLysLeuValLeuLeu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            372 CysArgAlaValValLeuLeuGlyArgAspAlaGlyLeuIleAlaGlnAlaLeuGlyAsn
    LeuAsnValSerGluAspHisMetAspArgTyrAspGlyMetAlaAspTyrHisLeuAla
                                                                                                                               118630 AAACAACGCATTTATACTGATTGTTTATTCCCATTGTAAAC------
                                                                                                                                                                                                                   -------GCGGACGAACCAGAAATTTGGCGCCATCTTCCGTTTAATAAAAACCT
                                                                                                                                                                                                                                                                 ---SerPheGlyLeuAsnLysProAspPheLysAlaPheGlyLeuIleGluGluAspGly
                                                                                                                                                                                                                                                                                                                                                   GlnLysTrpLeuAlaPheGlnPheAspLysLeuLeuProValGlyGluLeuLysIleArg
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ProPheAspAlaMetLeuGlyAlaLeuLysAlaPheSerGlyLeuAlaHisArgCysGln
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        AlaValProLeuValArgValAlaThrLeuAspGluAlaValArgGlnAlaAlaGluLeu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       412 AlaArgGluGlyAspAlaValLeuLeuSerProAlaCysAlaSerLeuAspMetPheLys
                                                                                      LysHisArgIlePheArgGlyAlaArgGlnValValValAsnArgAlaAspAlaLeuThr
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  AsnPheGluGluArgGlyArgLeuPheAlaLysAlaValGluGluLeu 447
                                                                                                                                                                          222 ArgProLeulleAlaAspThrValProCysTrp-
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Enterobacteriaceae; Salmonella.
                                                                                      202
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           432
                                                                                                                                                                                                                                                              233
                                                                                                                                                                                                                                                                                                                                                   252
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           292
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  392
  182
                                                                                                                                                                                                                   118672
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   KEYWORDS
SOURCE
ORGANISM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 DEFINITION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                REFERENCE
AUTHORS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ACCESSION
VERSION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             RESULT 6
AL627265
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             LOCUS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                    g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      a
                                  g
                                                                                                                                                                                                                                                            ò
                                                                                                                                                                                                                                                                                              g
                                                                                                                                                                                                                                                                                                                                     οχ
                                                                                                                                                                                                                                                                                                                                                                                     g
                                                                                                                                                                                                                                                                                                                                                                                                                                  δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ŏ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                δy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ŏ
                                                                                    δ
                                                                                                                        셤
                                                                                                                                                                      οy
                                                                                                                                                                                                            g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        118149
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              /product="hypothetical protein"
/protein_id="AA089578.1"
/db_xref="GI:3954064"
/translation="MSNFQKQQKAVSDSPALSNFFISVIFKSVTSIPIYLSSNWRTTN
PSPROPLKATTGGRAFFVS"
/gene="dacb"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                /translation-"MKKPFTLAILLSLFCSPLFAVEKQNPQTNINTILRSIKSKANLG
FIVSDVKTGRVIFSERSQFLFSPASTQKLFTAVAALYYLGSDYQFTTALLTNGAIKGQ
TLQGNLTLKFSGDPELTTEDLNRLIEKLKELGIHRISGHVYIDNTAYNDVPYPPGWML
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ArgThrProAlaLeuValGlnAlaAlaAlaLysGlyValArgIleSerGlyAspIleAsp 101
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ThrValThrThrLeuValGlyGluMetAlaValAlaAlaAspLysArgValAlaValGly 141
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            GlyAsnLeuGlyThrProAlaLeuAspLeuLeuAlaAspAspIleGluLeuTyrValLeu 161
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  GluLeuSerSerPheGlnLeuGluThrCysAspArgLeuAsnAlaGluValAlaThrVal 181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           81
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                LeuValArgTyrLeuAlaArgArgGlyLeuProPheAlaValValAspThrArgGluAsn 41
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     118090 IGTGCGCAGTTTTTAGCAGCAAGAAGAACCACCGTTTGCGGTGATGGACAGTCGTGAAGAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ProProGluLeuAlaThrLeuArgAlaGlnTyrProGlnValGluValArgCysGlyGlu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    LeuAspAlaGluPheLeuCysSerAlaArgGluLeuTyrValSerProGlyLeuSerLeu
                                                                                                                                                                                                                                                                                                                              ΉŒ
                                                                                                                                                                                                                                                                                                                                                                                   /transl_table=11
/product="D-alanju-D-alanine
carboxypeptidase/D-alanyl-D-alanju-D-alanju-B-alanju-D-alanju-B-alanju-B-alanju-B-alanju-B-alanju-B-alanju-B-alanju-B-alanju-B-alanju-B-alanju-B-alanju-B-alanju-B-alanju-B-alanju-B-alanju-B-alanju-B-alanju-B-alanju-B-alanju-B-alanju-B-alanju-B-alanju-B-alanju-B-alanju-B-alanju-B-alanju-B-alanju-B-alanju-B-alanju-B-alanju-B-alanju-B-alanju-B-alanju-B-alanju-B-alanju-B-alanju-B-alanju-B-alanju-B-alanju-B-alanju-B-alanju-B-alanju-B-alanju-B-alanju-B-alanju-B-alanju-B-alanju-B-alanju-B-alanju-B-alanju-B-alanju-B-alanju-B-alanju-B-alanju-B-alanju-B-alanju-B-alanju-B-alanju-B-alanju-B-alanju-B-alanju-B-alanju-B-alanju-B-alanju-B-alanju-B-alanju-B-alanju-B-alanju-B-alanju-B-alanju-B-alanju-B-alanju-B-alanju-B-alanju-B-alanju-B-alanju-B-alanju-B-alanju-B-alanju-B-alanju-B-alanju-B-alanju-B-alanju-B-alanju-B-alanju-B-alanju-B-alanju-B-alanju-B-alanju-B-alanju-B-alanju-B-alanju-B-alanju-B-alanju-B-alanju-B-alanju-B-alanju-B-alanju-B-alanju-B-alanju-B-alanju-B-alanju-B-alanju-B-alanju-B-alanju-B-alanju-B-alanju-B-alanju-B-alanju-B-alanju-B-alanju-B-alanju-B-alanju-B-alanju-B-alanju-B-alanju-B-alanju-B-alanju-B-alanju-B-alanju-B-alanju-B-alanju-B-alanju-B-alanju-B-alanju-B-alanju-B-alanju-B-alanju-B-alanju-B-alanju-B-alanju-B-alanju-B-alanju-B-alanju-B-alanju-B-alanju-B-alanju-B-alanju-B-alanju-B-alanju-B-alanju-B-alanju-B-alanju-B-alanju-B-alanju-B-alanju-B-alanju-B-alanju-B-alanju-B-alanju-B-alanju-B-alanju-B-alanju-B-alanju-B-alanju-B-alanju-B-alanju-B-alanju-B-alanju-B-alanju-B-alanju-B-alanju-B-alanju-B-alanju-B-alanju-B-alanju-B-alanju-B-alanju-B-alanju-B-alanju-B-alanju-B-alanju-B-alanju-B-alanju-B-alanju-B-alanju-B-alanju-B-alanju-B-alanju-B-alanju-B-alanju-B-alanju-B-alanju-B-alanju-B-alanju-B-alanju-B-alanju-B-alanju-B-alanju-B-alanju-B-alanju-B-alanju-B-alanju-B-alanju-B-alanju-B-alanju-B-alanju-B-alanju-B-alanju-B-alanju-B-alanju-B-alanju-B-alanju-B-alanju-B-alanju-B-alanju-B-alanju-B-alanju-B-alanju-B-alanju-B-alanju-B-alanju-B-alanju-B-alanju-B-alanju-B-alanju-B-a
                                                                                                                                                                                                                                                                                                                              family
                                                                                                                                                                                                                                                                                                                              protein
                         putative"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           301727
210
84
140
22
                                                                                                                                                                                                                                                                                                                            to PFAM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Length:
Matches:
Conservative:
Mismatches:
Indels:
                      Glimmer2;
                                                                                                                                                                                                                                                                                                                            match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               (1-301727)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Gaps:
                                                                                                                                                                                                                                                                                                     /locus_tag="CBU0009"
/note="identified by
/locus_tag="CBU0008"
/note="identified by
                                                                                                                                                                                                                                     /locus_tag="CBU0009"
9560. .10993
/gene="dacB"
                                        /codon_start=1
/transl_table=11
                                                                                                                                                                                                                                                                                                                                                                       /codon_start=1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 US-09-701-229-2 (1-448) x AE016960
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           1.58e-55
1023.00
64.47%
46.05%
45.27%
                                                                                                                                                                                                                                                                                                                                              PF00905"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Percent Similarity:
Best Local Similarity:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Alignment Scores:
Pred. No.:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              22
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 102
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        122
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     162
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  42
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       62
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               82
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              142
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Query Match:
DB:
                                                                                                                                                                                                 gene
                                                                                                                                                                                                                                                            CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Score:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   쉱
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          οy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       qq
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             QQ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       qq
```

119073

351

311

331

119133

391

431

COMMENT

```
/product="threonine synthase"
/protein_id="cAD01157.1"
/bc.xref="Eq:16501297"
/db_xref="SPTREMB1:0829R6"
/translation="MKLYNLKDHNEQVSFAQAVTQGLGKQQGLFFPHDLPEFSLTEID
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              /product="homoserine kinase"
/protein_id="CAD01156.1"
/db_xref="G1:16501286"
/db_xref="G1:2501286"
/translation="WYVVARASSANMSVGFDVLGAAVTPVDGTLLGDVVSVEAADHF
RIHNLGRFADKLPPEPRENIVYQCWERFCQALGKTIPVAMTLEKNMPIGSGLGSSACS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                VVAALVAMNEHCGKPLNDTRLLALMGELEGRISGSIHYDNVAPCFLGGMQLMIEENGI
ISQQVPGFDENUWLAYPGIKVSTARBARAILEPAQYRRQDCIAHGRHLAGFIHACYSRQ
POLAAALMKDVIABEYKARLLEGFSQARQAVSEIGALASGISGSGPTLFALCDKPETA
QRVADWLSKHYLQNQEGFVHICRLDTAGARVVG"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  TLAFKDFGGRFMAQMLTHISGDKPVTILTATSGDTGAAVAHAFTGLENVRVVILYPRG
KISPLQEKLFCTLGGNIETVAIDGDFDACQALVKQAFDDEELKTALGLNSANSINISR
LLAQICYYFEAVAQLPQGARNQLVISVPSGNFGDLTAGLLAKSLGLPVKRFIAATNIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               DTVPRFLHDGKWAPKATOATLSNAMDVSOPNWAPRVEELFRRKIWRLTELGYAAVDDT
TTQOTMRELKAKGYISEPHAAVAYRALRDQLNPGEYGLFLGTAHPAKFKESVESILGE
TLALPEALAERADLPLLSHHLPADFAALRKLMMTRQ"
                                                                                                                                                                                                                                                                                                                                   2801. 3730

Appen="STY10003"

/note="STY10003"

/note="STY10003"

/note="STY10003"

/note="STY10003"

/codon_start=1 (310 aa); 94% identity in 30% aa overlap"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         EMLNQDFVSRSAKILSAFIGDEIPQQILEERVRAAFAFPAPVAQVESDVGCLELFHGP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        /note="Orthologue of E. coli thrC (THRC_ECOLI); Fasta hit to THRC_ECOLI (428 aa), 93% identity in 428 aa overlap" /codon_start=1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      /gene="STY0005"
/note="Orthologue of E. coll yaaA (YAAA_ECOLI); Fasta hit
                                                                                                                                             /note="Pfam match to entry PF00742 Homoserine_dh,
Homoserine dehydrogenase, score 535.60, E-value 3.4e-157"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        3068. 3103
/gene="SYY0003"
/note="PSO0627 GHMP kinases putative ATP-binding domain"
3734. 5020
/gene="STY0004"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         3005. 3196
/gene="STY0003"
/note="Pfam match to entry PF00288 GHMP_Kinases, GHMP
Kinases putative ATP-binding proteins, score 79.20,
E-value 5.7e-21"
                                                                                                                                                                                                                             /note="PS01042 Homoserine dehydrogenase signature" 2801, .3730
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    /note="Pfam match to entry PF00291 PALP,
Pyridoxal-phosphate dependent enzyme, score 104.50,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              4022. .4066
/gene="STY0004"
/note="PS00165 Serine/threonine dehydratases
pyridoxal-phosphate attachment site"
complement(5114. .5887)
                               /gene="STY0002"
/note="PS00324 Aspartokinase signature"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  /note="synonym: yaaA"
complement(5114 .5887)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     /note-"synonym: thrC"
3734. 5020
/gene-"STX0004"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             /transl_table=11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             /transl_table=11
                                                                                       1819. .2781
/gene="STY0002"
                                                                                                                                                                                                                                                                                        2801. .3730
/gene="STY0003"
                                                                                                                                                                                                   2314. .2382
/gene="STY0002"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 3962. .4867
/gene="STY0004"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         /gene="STY0005"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                E-value 2e-27"
           misc_feature
                                                                                          misc_feature
                                                                                                                                                                                                      misc_feature
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              misc_feature
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           misc_feature
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    misc_feature
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         misc_feature
                                                                                                                                                                                                                                                                                        gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  CDS
Farrar, J., Feltwell, T., Hamlin, N., Haque, A., Hien, T.T., Holroyd, S., Jagels, K., Krogh, A., Larsen, T.S., Leather, S., Moule, S., O'Gaora, P., Stevens, K., Whitehead, S. and Barrell, B.G. Complete genome sequence of a multiple drug resistant Salmonella enterica serovar Typhi CT18
Nature 413 (6858), 848-852 (2001)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       /product="aspartokinase I/homoserine dehydrogenase I"
/protein_id="CAD01155.1"
/db_xref="CI:16501285"
/db_xref="SPTREMBL:082977"
/translation="MYUKFGGTSVANAERFLRVADILESNERGGQVATVLSAPAKIT
NHLVAMIEKTIGGQDALPNISDAERIFSDLLAGLASAQPGFPLARLKMVVEQEFAQIK
HVLHGISLLGQCPDSINAALICRGEKNSIAIMAGLLEARGHRYTVIDPVEKLLAVGHY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           RADCCEIWTDVDGVYTCDPRQVPDARLLKSMSYQEAMELSYFGAKVLHPRTTTPTAQF
QIPCLIKTNRQAPQATGSMSDDANLPWKGISNLNNMAMESYSGPGRKGMIGNAAR
VIPCAMSRAGISVITTGSSSENSTSRCVPQSDCARARRAMQDEFYLEKEGILEPLAV
TERLAIISVVGDGMRTLRGISAKFFAALARANINIVAIAQGSSERSISVVVNNDDATT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       GVRVTHQMLFNTDQVIEVFVICYGGYGGALLEQLKRQQTWLKNKHIDLRVCGVANSKA
LLTNVHGLNLDNWQAELAQANAPFNLGRLIRLVKEYHLLNPVIVDCTSSQAVADQYAD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    AGDELQKFSGILSGSLSFIFGKLEEGMSLSQÄTALAREMGYTEPDPRDDLSGMDVARK
LILARETGRELELSDIVIBEVLPDEFDASGDVTAFNAHLPQLDDAFAARVAKARDEG
KVLRYVGNIEEDGYVKKIAPVDGNDPLFKVKNGENALAFYSHYYQPLPLVLRGYGAG
NDVTAAGVFADLLRTLSWKLGV"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          FLREGFHVVTPNKKANTSSMDYYHQLRFAAAQSRRKFLYDTNVGAGLPVIENLQNLLN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     LESTVDIAESTRRIAASQIPADHMILMAGFTAGNEKGELVVLGRNGSDYSAAVLAACL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   coli thrA (AKIH_ECOLI); Fasta hit
94% identity in 820 aa overlap"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Details of S. typhi sequencing at the Sanger Centre are available on the World Wide Web. (URL, http://www.sanger.ac.uk/Projects/S_typhi/)... Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                //dote="Orthologue of E. coll thrL (LPT_ECOLI); Fasta hit
to LPT_ECOLI (21 aa), 86% identity in 21 aa overlap"
//codon_start=1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         /gene="STY0002"
/note="Pfam match to entry PF00696 aakinase, Amino acid
kinase family, score 207.70, E-value 1.7e-58"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    1. .251050
/organism="Salmonella enterica subsp. enterica serovar
                                                                                                                                                                                                                                                                                                         Direct Submission
Submitted (25-0CT-2001) Submitted on behalf of the Salmonalla
Sequencing team, Sanger Centre, Wellcome Trust Genome Campus,
Hinxton, Cambridge CB10 1SA, UK
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Product="thr operon leader peptide"
Protein_id="cab01154.1"
db_xref="G1:16501284"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           /db_xref-"SPTREMBL:Q8XG12"
/translation-"MNRISTTTITTITTGNGAG"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           /note="Orthologue of E.
to AK1H_ECOLI (820 aa),
/codon_start=1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   /mol_type="genomic DNA"
/strain="CT18"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       /db_xref-"taxon:90370"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      /note-"synonym: thrL"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    /note="synonym: thrA"
                                                                                                                                                                                                                                                                                                                                                                                                                  E-mail: parkhill@sanger.ac.uk
Notes:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     /transl_table=11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   table-11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       190. .255
/gene="STY0001"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                190. .255
/gene-"STY0001"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       /gene="STY0002"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        /gene="STY0002"
                                                                                                                                                                                                                                                   (bases 1 to 251050)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   transl/
                                                                                                                                                                                                                                                                             Parkhill, J.
                                                                                                                                                                                              21534947
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                misc_feature
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       source
                                                                                                                                                              JOURNAL
MEDLINE
PUBMED
                                                                                                                                                                                                                                                 REFERENCE
AUTHORS
                                                                                                                                                                                                                                                                                                    TITLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        FEATURES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             CDS
                                                                                                           TITLE
```

```
DEFINITION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       RESULT 7
AE016834
LOCUS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  148925 CGCGTGACGCCGCCCGGGTCTGGATAAGCTG------CCGCAAGAGGTTGAGCGT 148972
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                148805 ACGITAATCATGGCTGATTACCAGGACAAAAACGTCGTCATTATCGGTCTGGGCTTAACC 148864
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   149032
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  RSLKGSLSPOPGGLTSFQALCTSLAARIGSGNLAGVALAIAAGGPGAVFWWWYSAIIG
MATSPALCSLAQLYKRENDPTGCFRGGPAWYMARGAGARWYWYTALELLYAYGLIFNS
VOARNYSRALHFAFYPDIJSGLAAFCALLIIICIKGVARLMQWIPLIPLIALLWYG
SVFICLWHIEOMPGVIASIVKSAFGWOEAAAGAAGTTLTQAITSGFORGMFSNFRAGAG
STPNRAAARISYPPHPVAQGIVOMIGVFSDTIIICTASAMIILLAGHHASHSSFEGIO
LLQHAWYSLTGEWGASFVALIVILFAFSSIVANY IYABNNLFFLKLHNAKAIWLLKLA
TLGMINAGILISFPLHWQLADMIMACWAITHITAILLAGDYLROJKKLGYR
                                                                                                                                                              QISRLMGISDKLADLNATRFHDWQPHFTPDNARQAILAFKGDVYTGLQAETFNDADFD
RAQQHLRMLSGSLYGYLRPLDLMQPYRTBMGIRLEDPRGKDLYQFWGDIITDKLNBALE
RAQGRRWYNILASEEFFKSKRPKKLDAELIKPYFLDBRNGKFKVVSFYAKKARGLMSRF
IIENRLTKPPGLIAFDREGYFFDEETSTQDELVFKRYEQ"
                                                                                                                                             /translation="MLILISPAKTLDYQSPLATTRYTQPELLDHSQQLIQQARQLSAP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  /translation-"MPEFFSFINEILWGSVMIYLLLGAGCWFTWRTGFIQFRYIRQFS
                                                                                                                                                                                                                                                                                                                                                  /note="Similar to Bacillus subtilis amino acid carrier protein alst ALST SW:ALST_BACSU (Q45068; P40743) fasta scores: E(): 0, 45.3% id in 477 aa, and to Alteromonas haloplanktis net(+)-linked D-alanine glycine permease DAGA SW:DAGA_ALTHA (P30144) fasta scores: E(): 0, 36.5% id in
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               117
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ---IleValValGlyLeuGlyLysSer 18
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     38
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       57
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              97
  aa overlap'
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     GlyMetSerLeuValArgTyrLeuAlaArgArgGlyLeuProPheAlaValAspThr
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ArgGluAsnProProGluLeuAlaThrLeuArgAlaGlnTyrProGln---ValGluVal
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          GlyLeuSerLeuArgThrProAlaLeuValGlnAlaAlaAlaLysGlyValArgIleSer
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          GlyAspIleAspLeuPheAlaArgGluAlaLysAlaProIleValAlaIleThrGlySer
                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Orthologue of E. coli yaaJ (YAAJ_ECOLI); Fasta hit to YAAJ_ECOLI (476 aa), 76% identity in 476 aa overlap"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        /transl_table=11
/product="putative amino-acid transport protein"
/protein_id="Capol159.1"
/db_xref="GI:16501289"
/db_xref="SPTREMBL:0829R4"
aa), 86% identity in 257
                                                            /product-"conserved hypothetical protein"
| protein_ad="CAD01188" | "
| db_xref="GI:16501288" | db_xref="SPTREMBL:0829R5"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Length:
Matches:
Conservative:
Mismatches:
Indels:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                SerLeulleAlaSerAspHisPheArg----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Gaps:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         (1-251050)
                                                                                                                                                                                                                                                  complement(5966. .7396)
/gene="STY0006"
                                                                                                                                                                                                                                                                                          /note="synonym: yaaJ"
complement(5966. .7396)
    YAAA_ECOLI (258
                       /codon_start=1
/transl_table=11
                                                                                                                                                                                                                                                                                                                                 /gene="STY0006"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           /codon_start=1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       US-09-701-229-2 (1-448) x AL627265
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        1.83e-53
990.00
64.18%
51.21%
43.81%
                                                                                                                                                                                                                                                                                                                                                                                                                                                              aa
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Best Local Similarity:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Percent. Similarity:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Alignment Scores:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   19
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     39
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          78
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   149033
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             98
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Query Match:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Pred. No.:
                                                                                                                                                                                                                                                  gene
                                                                                                                                                                                                                                                                                                             CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Score:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ŏ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ŏ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        DB
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ŏ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ģ
```

```
149153 AACGGCAAAAGCACCGTGACCACCTTAGTGGGCGAGATGGCGAAGGCGGCGGCGCGTCAAT 149212
                                                                                    149272
                                                                                                                                              149273 TTGTACGTGCTGGAATTATCCAGTTTCCAATTGGAAACTACCTCAAGTTTGCAAGCGGCG 149332
                                                                                                                                                                                                                                                                                                                         149512
                                                                                                                                                                                                                                                                                                                                                                                                                                     149564 GTCAAAGGTGAAAAGGTGCTGAAAGAGATGAAGCTTTCCGGTCAGCATAACTAT 149623
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        149905
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              149906 ATCCGCCTGTATTGCTTTGGCGCGCAGCGCGCAGCTTGCC---GCACTGCGTCCGGAA 149962
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   150019
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                AATATGGGTGATTATCAC-----CTTAATCGTCAGCAGGGCGAAACCTGGCTACGA 149563
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  149857
                                                                                                                                                                                                                                                                                            236
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           336
                                                                                                                                                                                                                                   216
                                                                                                                                                                                                                                                                                                                                                       256
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      356
                                                         157
                                                                                                                                                                         178 ValalaThrValLeuAsnValSerGluAspHisMetAspArgTyrAsp---GlyMetAla 196
                                                                                                                                                                                                                                                                                                                                                                                                                 276
                                                                                                                                                                                                                                                                                                                                                                                                                                                                         SerAsnAlaLeuAlaAlaLeuAlaLeuGlyHisAlaValGlyLeuProPheAspAlaMet 296
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               374
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           -----ValValLeuLeuGlyArgAspAlaGlyLeuIleAlaGlnAlaLeuGlyAsnAla 392
                                                                        149453 GATGACGCTTGACGATGCCGGTACGCGGGCCCGATGAGCGCTGCGTCAGCTTTGGCGTC
                                                                                                                                                                                                                                                                                                                                                     AsnLysProAspPheLysAlaPheGlyLeuIleGluGluAspGlyGlnLysTrpLeuAla
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           GlnGlyValSerTyrTyrAspAspSerLysAlaThrAsnValGlyAlaAlaLeuAlaAla
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ||| |||||||||||| AAGTCGGCAGACTTT-----TCTCCGCTGGCGCGCTATCTGACCGGCGATCGT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ATC - - - GCCCAACAGACTGAGACGATGGAAGAGGCGATGCGTTTGCTGGCGCCGCACGTT
 AsnAlaLysSerThrValThrThrLeuValGlyGluMetAlaValAlaAlaAspLysArg
                                                                                                                  LeuTyrValLeuGluLeuSerSerPheGlnLeuGluThrCysAspArgLeuAsnAlaGlu
                                                                                                                                                                                                                                   AspTyrHisLeuAlaLysHisArgIlePheArgGlyAlaArgGlnValValAsnArg
                                                                                                                                                                                                                                                                                             AlaAspAlaLeuThrArgProLeuIleAlaAspThrValProCysTrpSerPheGlyLeu
                                                                                                                                                                                                                                                                                                                                                                                                                PheGlnPheAspLysLeuLeuProValGlyGluLeuLys1leArgGlyAlaHisAsnTyr
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    LeuGlyAlaLeuLysAlaPheSerGlyLeuAlaHisArgCysGlnTrpValArgGluArg
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      IleGluGlyLeuGlyAlaAspIleAspGlyLysLeuValLeuLeuAlaGlyGlyAspGly
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ValProLeuValArgValAlaThrLeuAspGluAlaValArgGlnAlaAlaGluLeuAla
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 413 ArgGluGlyAspAlaValLeuLeuSerProAlaCysAlaSerLeuAspMetPheLysAsn
                                                         ValAlaValGlyGlyAsnLeuGlyThrProAlaLeuAspLeuLeuAlaAspAspIleGlu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 LysGlyAlaAspPheHisAspLeuArgGluProValAlaArgPheCysArgAla----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         PheGluGluArgGlyArgLeuPheAlaLysAlaValGluLeu 447
                                                                                                                                                                                                                                                                                             217
                                                                                                                                                                                                                                                                                                                                                       237
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           317
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      337
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             375
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      393
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          433
                                                       138
                                                                                                                                                                                                                                                                                                                                                                                                                                                                          277
                                                                                                                                                                                                       149333
                                                                                                                                                                                                                                   197
                                                                                                                                                                                                                                                                                                                                                                                  149513
                                                                                                                                                                                                                                                                                                                                                                                                                257
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              149684
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         149744
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   149804
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 357
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              149858
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   149963
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       150080
118
                                                                                                                  158
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    297
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       qq
                          g
                                                                                 ద
                                                                                                                                            g
                                                                                                                                                                        ŏ
                                                                                                                                                                                                  g
                                                                                                                                                                                                                                   ŏ
                                                                                                                                                                                                                                                             g
                                                                                                                                                                                                                                                                                    δ
                                                                                                                                                                                                                                                                                                                        g
                                                                                                                                                                                                                                                                                                                                                     δ
                                                                                                                                                                                                                                                                                                                                                                                  g
                                                                                                                                                                                                                                                                                                                                                                                                                ò
                                                                                                                                                                                                                                                                                                                                                                                                                                          g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ŏ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Qγ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   d
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ద
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ŏ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ò
                                                       ò
                                                                                                               ŏ
```

AE016834 300169 bp DNA linear BCT 21-MAR-2003 Salmonella enterica subsp. enterica serovar Typhi Ty2, section 1 of

AE016834

```
/translation=myrkylapssanmsvgfdvlgaavtpvdgtllgdvvsveaadhf
/translation=myrkylapssanmsvgfdvlgaavtpvdgtllgdvssgcssgcs
YvaalvamnehcgkplndyrkllalmgelegarsgsihtdvvapcfllggmQlmiebkol
ISOQVPGFDEWLWVLayPGIKVSTAEARAILPAQYRRQDCIAHGRHLAGFIHACYSRQ
PQLAAALMKDVIAEPYRAKLLPGFSQARQAVSEIGALASGISGSGPTLFALCDKPETA
3734 . 5020
/gene="thrc"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       /product-"threonine synthase"
/protein_id="AAO67738_1"
/doctein_id="13191361718" 1"
/translation-"kKIYNIKDHNEQVSFAQAVTQGLGKQQGLFFPHDLPEFSLTEID
FMLNQDFVSRSAKILSAFIGDEIPQQILEERVRAAFAFPAFVAQVESDVGCLELFHGP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        TLAFKDFGGRFWAQMLTHISGDKPVTILTATSGDTGAAVAHAFYGLENVRVVILYPRG
KISPLQEKLFCTLGGNIETVAIDGDFDACQALVKQAFDDEELKTALGLNSANSINISR
LAQICVYFERYAQLPQGARNQLVISVPSGNFGDLTAGLLAKSGLGPVKRFIAATNIN
DTVPRELYDGKWAPKATQATLSNAMDVSQPNNWPRVEELFRKIUWLTFLGYAAVDDT
TTQQTRKELKAKGYISPPHAAVYRRALRQDLNGEYGFRGTGTHPAKKESVESILGE
TLALPEALAERADLFLLSHHLPADFAALRKLMMTRQ"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             /translation="MLILISPAKTLDYQSPLATTRYTQPELLDHSQQLIQQARQLSAP
QQRLMAGIDKLADLMATREHDWQPHFTPDMARQAILAFKGDYYTGIQAETFNDADFD
FAQQHLRMLSGLYGVLRPLDLMQPYRLEMGIRLENPRGKDLYQFWGDIJTDKLNBALE
AQGDRYVVNIASEEFEKSVKRKKLDAELIKPYFLDBKNGKFKVVSFYAKKARGLMSRF
IIENRLTKPPGQLTAFDREGYFFDEETSTQDELVFKRYEQ"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           /iocus_tag="t0004"
/note="corresponds to STY0004 from Accession AL513382:
Salmonella typhi CTI8"
/codon_start=1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 /note="corresponds to STY0005 from Accession AL513382: Salmonella typhi CT18"
                                                                                                                                                                     STY0003 from Accession AL513382:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               /iocus_tag="t0006"
/note="corresponds to STY0006 from Accession AL513382:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           /product-"putative amino-acid transport protein"
/protein_id-"AAO67740.1"
/db_xref-"GI:29136173"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             /product-"conserved hypothetical protein"
/protein_id-"AAO67739.1"
/db_xref-"GI:29136172"
                                                                                                                                                                                                                                                                             /product="homoserine kinase"
                                                                                                                                                                                                                                                                                                   /protein_id="AAO67737.1"
/db_xref="GI:29136170"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 /locus_tag="t0005"
complement(5114. .5887)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        complement(5114. .5887)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   complement(5966. .7396)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              complement(5966. .7396)
                                                                                                                                      /locus_tag="t0003"
/note="corresponds to salmonella typhi CT18"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Salmonella typhi CT18"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 /locus_tag="t0005"
/note="corresponds
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   /locus_tag="t0004"
                                                            locus_tag="t0003"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  /locus_tag="t0006"
                                                                                                                                                                                                                                                    /transl_table=11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      /transl_table=11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         /transl_table=11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        /transl_table=11
                                                                                                                                                                                                                         /codon_start=
                                                                                        2801. .3730
/gene="thrB"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            3734. .5020
/gene="thrc"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              /gene="yaaA"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           /gene="yaaA"
           1801. .3730
gene="thrB"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            /gene="yaaJ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            /dene="yaaJ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    gene
                gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           gene
                                                                                        CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      /trnslation="mrylkfogtsvanaerflrvadilesnsrogovatvlsapakit
nhlvamiektiggodalpnisdaerifsdllaglasaopgfplarlkmyveogfbajik
hylhgisllgocpdsinaalicrgekmsiaimagllearghrytidpvekllayghy
lestydiaestrriaasqipadhmilmagftagnekgelyylgrngsdysaavlaacl
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       QIPCLIKNTGNPQAPGTLIGASSDDDNLPVKGISNLNNMAMFSVSGPCMKGMIGMAAR
VFAAMSRAGISVVLITQSSSEYSISFCVPQSDCARARRAMQDEFYLELKEGLLEPLAV
TERLAIISVVGDGMRTLRGISAKFFAALARANINIVAIAQGSSERSISVVVNNDDATT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  LLTNVHGLNLDNWQAELAQANAPFNLGRLIRLVKEYHLLNPVIVDCTSSQAVADQYAD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        FLREGFHVVTPNKKANTSÄMDYYHOLRFAAAOSRRKFLYDTNVGAGLPVÏENLONLLN
AGDELOKFSGILSGSLSFIFGKLEEGMSLSQATALAREMGYTEPDPRDDLSGMDVARK
LLILARETGRELELSDIVIEPVLPDEFDASGDVTAFMAHLPOLDDAFAARVAKARDEG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    RADCCEIWTDVDGVYTCDPRQVPDARLLKSMSYQEAMELSYFGAKVLHPRTITPIAQF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       GVRVTHQMLFNTDQVIEVFVIGVGGVGGALLEQLKRQQTWLKNKHIDLRVCGVANSKA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      KVLRYVGNIEEDGVCRVKIAEVDGNDPLFKVKNGENALAFYSHYYQPLPLVLRGYGAG
                                                                                                                                                                                                              1 (bases 1 to 300169)
Deng, W., Liou, S.R., Plunkett III, G., Mayhew, G.F., Rose, D.J.,
Burland, V., Kodoyianni, V., Schwartz, D.C. and Blattner, F.R.
Comparative Genomics of Salmonella enterica Serovar Typhi Strains
                                                                                                     Salmonella enterica subsp. enterica serovar Typhi Ty2
Salmonella enterica subsp. enterica serovar Typhi Ty2
Bacteria; Proteobacteria; Gammaproteobacteria; Enterobacteriales;
Enterobacteriaceae; Salmonella,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     /organism="Salmonella enterica subsp. enterica serovar
Typhi Ty2"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      /locus_tag="t0001"
/note="corresponds to STY0001 from Accession AL513382:
Salmonella typh1 CT18"
/codon_start=1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    /Jous_tea="t0002"
/locus_tea="corresponds to STY0002 from Accession AL513382:
Salmonella typh1 CT18; homoserine dehydrogenase I"
                                                                                                                                                                                                                                                                                                                                                                                                                                                  Deng, W., Liou, S.-R., Plunkett, G. III, Mayhew, G.F., Rose, D.J., Burland, V., Kodoylanni, V., Schwartz, D.C. and Blattner, F.R. Direct Submission
Submitted (25-SE-2002) Laboratory of Genetics, University of Wisconsin - Madison, 445 Henry Mall, Madison, WI 53706, USA Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      /product="thr operon leader peptide"
/protein_id="AAO67735.1"
/db_xref="G1:29136168"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     /translation="MNRISTTTITITITIGNGAG"
                                                                                                                                                                                                                                                                                                                                               J. Bacteriol. 185 (7), 2330-2337 (2003) 22531367
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           /product-"aspartokinase I"
/protein_id-"AA067736.1"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          /db_xref="taxon:209261"
190. .255
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           /serovar="Typh1"
/sub_species="enterica"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            /mol_type="genomic DNA"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  /db_xref="GI:29136169"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 NDVTAAGVFADLLRTLSWKLGV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          /locus_tag="t0001"
190. .255
/gene="thrL"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          /locus_tag="t0002"
337. .2799
16 of the complete genome. AE016834 AE014613
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  /transl_table=11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     /transl_table=11
                                                    AE016834.1 GI:29136167
                                                                                                                                                                                                                                                                                                                                                                                                                               (bases 1 to 300169)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           190. .255
/gene="thrL"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       /gene="thrA"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    /gene-"thrA"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        /strain="Ty2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          300169
                                                                                                                                                                                                                                                                                                                            Ty2 and CT18
                                                                                                                                                                                                                                                                                                                                                                                                    12644504
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  source
                                                                                                        SOURCE
ORGANISM
                                                                                                                                                                                                                                                                                                                                                                     MEDLINE
PUBMED
                                                                                                                                                                                                                                                                                                                                                                                                                            REFERENCE
AUTHORS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       TITLE
JOURNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 gene
                                                    VERSION
KEYWORDS
                                                                                                                                                                                                                 REFERENCE
                                                                                                                                                                                                                                         AUTHORS
                                                                                                                                                                                                                                                                                                                                               JOURNAL
```

FEATURES

TITLE

```
149444
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       149849
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               149955 ATC---GCCCAACAGACTGAACTGGAAGAGGCGGATGCGTTTGCTGGCGCGCACGTT 150011
  --CCGCAAGAGGTTGAGCGT 148964
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       149445 GATGACGCGTTGACGATGCCGGTACGCGGGCCCGATGAGCGCTGCGTCAGCTTTGGCGTC 149504
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    AAGTCGGCAGACTTT------TCTCCGCTGGCGCGCTATCTGACCGGCGATCGT 149897
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     149898 ATCCGCCTGTATTGCTTTTGGGCGCGATGGCGCGCAGCTTGCC---GCACTGCGTCCGGAA 149954
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               216
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          276
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      356
                                                                                                                                                                                                                                                                                                                                              AsnAlaLysSerThrValThrThrLeuValGlyGluMetAlaValAlaAlaAspLysArg 137
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             LeuTyrValLeuGluLeuSerSerPheGlnLeuGluThrCysAspArgLeuAsnAlaGlu 177
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          AlaAspAlaLeuThrArgProLeuIleAlaAspThrValProCysTrpSerPheGlyLeu 236
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          SerAsnAlaLeuAlaAlaLeuAlaLeuGlyHisAlaValGlyLeuProPheAspAlaMet 296
                                                  11
                                                                                                                                              97
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ValAlaValGlyGlyAsnLeuGlyThrProAlaLeuAspLeuLeuAlaAspAspIleGlu
                                                                                                                                                                                                                                                                                                                                                                                           178 ValAlaThrValLeuAsnValSerGluAspHisMetAspArgTyrAsp---GlyMetAla
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   CACGTTGGCGGCCTGAACGACGAGTGGCTCTTAGCGGCGGATTTAATCGTCGCCAGCCCT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       149556 GTCAAAGGTGAGAAGGTGCTGAACGTGAAAGAGTGAAGCTTTCCGGTCAGCATAACTAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ArgCysGlyGluLeuAspAlaGluPheLeuCysSerAlaArgGluLeuTyrValSerPro
                                                                                                                                              GlyLeuSerLeuArgThrProAlaLeuValGlnAlaAlaAlaLysGlyValArgIleSer
                                                                                                                                                                                                                                             GlyAspIleAspLeuPheAlaArgGluAlaLysAlaProIleValAlaIleThrGlySer
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         AspTyrHisLeuAlaLysHisArgIlePheArgGlyAlaArgGlnValValValAsnArg
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         AsnLysProAspPheLysAlaPheGlyLeuIleGluGluAspGlyGlnLysTrpLeuAla
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       PheGlnPheAspLysLeuLeuProValGlyGluLeuLysIleArgGlyAlaHisAsnTyr
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         LeuGlyAlaLeuLysAlaPheSerGlyLeuAlaHisArgCysGlnTrpValArgGluArg
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       GlnGlyValSerTyrTyrAspAspSerLysAlaThrAsnValGlyAlaAlaLeuAlaAla
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      CTAAACGGTTTG-----CATGTGGACGGTACGCTGCATCTGCTGCTGCTGGGCGGCGACGGT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ValProLeuValArgValAlaThrLeuAspGluAlaValArgGlnAlaAlaGluLeuAla
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      LysGlyAlaAspPheHisAspLeuArgGluProValAlaArgPheCysArgAla-----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       -----ValValLeuLeuGlyArgAspAlaGlyLeuIleAlaGlnAlaLeuGlyAsnAla
  148917 CGCGTGACGCCGCCGGGTCTGGATAAGCTG----
                                                                                                                                                                                                                                                                                                                                              118
                                                                                                                                                                                                                                                                                                                                                                                                                                            138
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            197
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          217
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          257
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      337
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             158
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        277
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         297
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       317
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   393
                                                  28
                                                                                                148965
                                                                                                                                              78
                                                                                                                                                                                                                                             86
                                                                                                                                                                                                                                                                                                                                                                                           149145
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            149205
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             149265
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         149505
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      357
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         237
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       149676
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      149796
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    149850
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       375
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ά
                                                                                           셤
                                                                                                                                                                                     g
                                                                                                                                                                                                                                             ò
                                                                                                                                                                                                                                                                                        g
                                                                                                                                                                                                                                                                                                                                        δ
                                                                                                                                                                                                                                                                                                                                                                                      g
                                                                                                                                                                                                                                                                                                                                                                                                                                         δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ŏ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ŏ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ద
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              g
                                                ŏ
                                                                                                                                            δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Qγ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   δλ
                    VQANAVSRALHFAFNIPPLISGIALAFCALLIIIRGIKGVARLMQWLIPLIALLWYAG
SVPTCLWHIEDMFGYTASITYSAFKGMCAAAGAAGYTULQAFATSGPGKMESWESMESMS
STPNAAAAATSYPHPHYAGGIVQMIGVFSDTIIICTASAMIILLAGHHASHSSTEGIO
LLQHAMVSLIGEWGASFVALIVILFAFSSIVANYIYAENNLFFIRLHNAKAIMLERLA
TEGWYIAGTLISFPLIWQLADMIMAMAITNLTAILLLSFVYYTLAGDYLRQRKLGVR
PQFDPRRFDIIEPQLAPDTWDAASRD"
                                                                                                                                                                                                                                                                                                                                                                                                                                  /process __da_anosc_741.1"
/db_xref="G1:29136174".1"
/db_xref="G1:29136174".
/db_xref="G1:2913617".
/db
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   /product-"molybdopterin biosynthesis Mog protein"
/protein_id="RA067142.1"
/d_xref="G1:29136175"
/translation="WHTLRIGIVSISDRASSGVYQDKGIPALEEWLASALTTPFELQT
RLIPDEQAIIEQTLCELVDEMSCHLVLTTGGTGPARRDVTPDATLAALADREMPGFGEQ
MRQISLRFVPTALLSRQVGVIRKQALILINLPGQPKSIKETLEGVKADDGSVSVPGIFA
4ATSFAECSLAQLYKERDPTGQFRGGPAWYMARGLGMRWMGVVFALFLLVAYGLIFNS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           18
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          57
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         GlyMetSerLeuValArgTyrLeuAlaArgArgGlyLeuProPheAlaValValAspThr 38
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          /note="corresponds to STY0009 from Accession AL513382:
Salmonella typhi CT18"
/codon_start=1
                                                                                                                                                                                                                                                                                                                 STY0007 from Accession AL513382:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          STY0008 from Accession AL513382:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        SerLeuIleAlaSerAspHisPheArg-----IleValValGlyLeuGlyLysSer
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ArgGluAsnProProGluLeuAlaThrLeuArgAlaGlnTyrProGln----ValGluVal
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    SVPYCIQLLDGPYVETAPEVVAAFRPKSARRENMSS.
complement(9376. .9942)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Length:
Matches:
Conservative:
Mismatches:
                                                                                                                                                                                                                                                                                                                                                                                                                  /product="transaldolase B"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Indels:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          (1-300169)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   complement(9376. .9942)
                                                                                                                                                                                                                                                                                   /Jocus_tag="t0007"
/note="corresponds to salmonella typhi CT18"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                /locus_tag="t0008"
/note="corresponds to
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Salmonella typhi CT18
                                                                                                                                                                     7665. .8618
/gene="talB"
/locus_tag="t0007"
7665. .8618
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 /locus_tag="t0009"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            /locus_tag="t0009"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         locus_tag="t0008"
                                                                                                                                                                                                                                                                                                                                                               /codon_start=î
/transl_table=11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 'transl_table=11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        US-09-701-229-2 (1-448) x AE016834
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     'gene="yaaH"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  2.27e-53
990.00
64.18%
51.21%
43.81%
                                                                                                                                                                                                                                                              /gene="talB"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             3729. 9319
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               /gene="yaaH"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         8729. .9319/
/gene="mog"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    =
=
=
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Best Local Similarity:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Percent Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Alignment Scores:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ~
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       19
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       39
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      148797
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Query Match:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     . N0.:
                                                                                                                                                                     gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Pred.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  셤
```

셤

ð

셤

à

```
/translation-"Markfythtglyvpldaanvdydaiiproflokytrtgfgahlf
NDWRFLDEKGQOPNPEFVLNFPEYQGASILLARENFGCGSSREHAPWALTDYGFKVVI
APSFADIFYGNSFNNQLLPVTLSDAQVDELFALVKANPGIKFEVDLEAQVVKAGDKTY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 GRÄKTMKIEVTGNAAPGITAKDIVLAIIGKTGSAGGTGHVVEFCGDAIRALSNEGRMT
LCNAAIEMGAKAGLVAPDETTENYVKGRLHAPKGRDFDEAVEYWKTLKTDDGATFDTV
VARAREEIAPQVTWGTNPGQVISVTDIIPDPASFSDPVERASPEKALAYWGLQPGVPL
TDVAIDKVFIGSCTNSRIEDLRAAAEVAKGRKVAPGVQALVVPGSGPVKAQAEBGLD
KIFIERGFEWRLPGCENCLAMNNDRLNPGERCASTSNRNFEGRGGRGRTHLVSPAMA
AAAAVTGHFADIRSIK"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            /product-"3-isopropylmalate dehydrogenase"
/protein_id-"AAL19076.1"
/brotein_id-"AAL19076.1"
/b_xref-"GI:16418611"
/translation-"MSKNYHIAVLPGDGIGPEVMAQALKVMDAVRSREDMRITTSHYD
VGGIAIDNHGHPLPRATVEGCEQADAILFGSVGGPRWENLPPESQPERGALLPLRKHF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                /product="3-isopropylmalate isomerase (dehydratase),
subunit with LeuD"
/protein_id="AALi9075.1"
/db_xref="GI:16418610"
/translation="MAKTLVERLEDAHVVFEAPNETPLLYIDRHLVHEVTSPQAFDGL
RAHHRPVRQPGKTFATWDHNVSTQTKDINASGEMARIOMQELIKNCNEFGVELYDLNH
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        KLFSNLRPAKLYQGLEAFCPLRADIAANGFDILCVRELTGGIYFGQPKGREGSGGYEK
AFDTEYYHREEIERIARIAEESARKRRKYTSIDKANYLOSSILMRETYNDYAKTYPD
VELAHWY IDNATWQLIKDPSOFDVLLCSNLFGDILSDECAMITGSMGMLPSASLNEGG
FGLYEPAGGSAPDIAGKNIANPIAQILSLALLLRYSLDANDAATAIEQAINRALEEGY
RTGDLARGAAAVSTDEMGDIIARYVAEGY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         PYQGIVHVMGPEQGVTLPGMTIVCGDSHTATHGAFGALAFGIGTSEVEHVLATQTLKQ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            /note="3-isopropylmalate dehydrogenase. (SW:LEU3_SALTY)"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  /gene="leub"
/note="putative RBS for leuC; RegulonDB:STMS1H000491"
complement(3408. 4999)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   /note-"putative RBS for leuD; RegulonDB:STMS1H000490"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              /gene="leuA"
/EC_number="4.1.3.12"
/EC_number="4.1.3.12"
/AOC73185.11; Blastp hit to AAC73185.1 (523 aa), 928
/dentity in aa 1 - 523"
/codon_start=1
                                                                                                                                                                                              /product-"3-isopropylmalate isomerase (dehydratase),
subunit with Leuc"
/protein id="AL19074.1"
/db_xref="GI:16418609"
                                                                                small subunit.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    /note="3-isopropylmalate dehydratase large subunit.
(SW:LEU2_SALTY)"
                                                                                                                                                                                                                                                                                                                                                                                             SFKIDDFRRHCMLNGLDSIGLTLQHEDAIAAYENKQPAFMR"
complement(910. .915)
/gene="leuD"
                                                                             /note="3-isopropylmalate dehydratase (SW:LEUD_SALIY)"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                /note="synonym: STM0111"
complement(914. .2314)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           /note="synonym: STM0112"
complement(2317. 3408)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      STM0113"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     complement(2317. .3422)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          complement(2322. .2327)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    complement(3408. .4979)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    complement(914. .2327)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         /gene="leuB"
/EC_number="1.1.1.85"
                             /gene="leuD"
/EC_number="4.2.1.33"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          /EC_number="4.2.1.33"
complement(298. .903)
                                                                                                                                           /codon_start=1
/transl_table=11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          /codon_start=1/trans1_table=11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    /transl_table=11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      /note="synonym:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            /codon_start=1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            /gene="leuC"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           /gene="leuA"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   /gene="leuB"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            /gene-"leuC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    gene
CDS
                                                                                                                                                                                                                                                                                                                                                                                                                             RBS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          RBS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    CDS
                                                        150012 CAGCCGGGTGATATGGTGCTGTTGTCGCCCGCCTGCCCGCCTCGATCAGTTTAAAAAT 150071
                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Salmonella typhimurium LT2
Salmonella typhimurium LT2
Bacteria; Proteobacteria; Gammaproteobacteria; Enterobacteriales;
Enterobacteriaceae; Salmonella.
1 (bases 1 to 22348)
McClelland,M., Sanderson,K.E., Spieth,J., Clifton,S.W.,
Latrellle,P., Courtney,L., Porwollik,S., Ali,J., Dante,M., Du,F.,
Hou,S., Layman,D., Leonard,S., Nguyen,C., Scott,K., Holmes,A.,
Stoneking,T., Nhan,M., Waterston,R. and Wilson,R.K.
Complete genome sequence of Salmonella enterica serovar Typhimurium
                                                                                                                                                                                                                                                                                                      AE008699 22.348 bp DNA linear BCT 23.APR-2003 Salmonella typhimurium LT2, section 7 of 220 of the complete
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          This sequence was finished as follows unless otherwise noted: all regions were double stranded, sequenced with an alternate chemistries or covered by high quality data (i.e., phred quality >= 30); an attempt was made to resolve all sequencing problems, such as compressions and repeats; all regions were covered by sequence
                    ArgGluGlyAspAlaValLeuLeuSerProAlaCysAlaSerLeuAspMetPheLysAsn 432
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Coding sequences below are predicted from manually evaluated computer analysis, using similarity information and the programs; GLIMMER; http://www.itgr.org/softlab/glimmer/glimmer.html and GeneMark; http://opal.biology.gatech.edu/GeneMark/
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       The analyses of ribosome binding sites and promoter binding sites were kindly provided by Heladia Salgado, Julio Collado-Vides and
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        EC numbers were kindly provided by Junko Yabuzaki and the Kyoto Encyclopedia of Genes and Genomes; http://www.genome.ad.jp/kegg/and Pedro Romero and Peter Karp at EcoCyc; http://ecocyc.PangeaSystems.com/ecocyc/
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Submitted (29-MAR-2001) Genome Sequencing Center, Department of Genetics, Washington University School of Medicine, 4444 Forest Park Boulevard, St. Louis, MO 63108, USA COMMENT Supported by NIH grant 50 01 AI43283
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       http://kinich.cifn.unam.mx:8850/db/regulondb_intro.frameset
                                                                                                                             Salmonella typhimurium Genome Sequencing Project
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    1. .22348
/organism="Salmonella typhimurium LT2"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             /mol_type="genomic DNA"
/strain="LT2; SGSC 1412; ATCC 700720"
/db_xref="ATCC:700720"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Nature 413 (6858), 852-856 (2001)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    /gene="leuD"
/note="synonym: STM0110"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               from more than one m13 subclone.
Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      /db_xref="taxon:99287"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            complement(298. .915)
                                                                                                                                                                                                                                                                                                                                                                                    AE008699 AE006468
AE008699.1 GI:16418608
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           (bases 1 to 22348)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Direct Submission
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                11677609
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        21534948
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ReguonDB
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   The
                                                                                                                                                                                                                                                                                                                                                                                                                       VERSION
KEYWORDS
SOURCE
ORGANISM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             source
                                                                                                                                                                                                                                                                                                                                 DEFINITION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        REFERENCE
AUTHORS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   AUTHORS
CONSRIM
TITLE
JOURNAL
                                                                                                                                                                                                                                                                                                                                                                                             ACCESSION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           REFERENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        JOURNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                PUBMED
                                                                                                                                                                                                                                                                              AE008699
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             FEATURES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               TITLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         COMMENT
                                                                                                                                                                                                                                                 RESULT
```

```
18859
                                                                                                                                                                                                                                                                                                                                                                                                                                             18920 GGCGATATCGAACTGTTTTGCCGCGAAGCGCAAGCGCCGATTGTGGCCATCACCGGCTCG 18979
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    19279
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       19340 AATATGGGCGATTATCAC-----CTTAATCGTCAGCAGGCGAAACCTGGCTGCGA 19390
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        19450
                                                                  18632 ACGTTAATCATGGCTGATTACCAGGACAAAACGTCGTCATTATTGGTCTGGGCTTAACC 18691
                                                                                                                                       18751
                                                                                                                                                                                                                                                                                                                                                                             117
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   216
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      236
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         296
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            316
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             336
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                LeuTyrValLeuGluLeuSerSerPheGlnLeuGluThrCysAspArgLeuAsnAlaGlu 177
                                                                                                                                                                                                                                          77
                                    18
                                                                                                      38
                                                                                                                                                                        57
                                                                                                                                                                                                                                                                                                           97
                                                                                                                         CACGTTGGCGCCTGAACGACGACGAGTGCTTTAGCGGCGGGGTTTAATCGTCGCCAGCCCT
                                                                                                                                                                                                                                                                                                                                                                            GlyAspileAspLeuPheAlaArgGluAlaLysAlaProileValAlaileThrGlySer
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  178 ValAlaThrValLeuAsnValSerGluAspHisMetAspArgTyrAsp---GlyMetAla
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  19280 GATGACGCTTGACGATGCCGGTACGCGGGGCCGATGAACGCTGCGTTAGCTTTGGCGTC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            297 LeuGlyAlaLeuLysAlaPheSerGlyLeuAlaHisArgCysGlnTrpValArgGluArg
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               317 GlnGlyValSerTyrTyrAspAspSerLysAlaThrAsnValGlyAlaAlaLeuAlaAla
                                                                                                                                                                        39 ArgGluAsnProProGluLeuAlaThrLeuArgAlaGlnTyrProGln---ValGluVal
                                                                                                                                                                                                                                           58 ArgCysGlyGluLeuAspAlaGluPheLeuCysSerAlaArgGluLeuTyrValSerPro
                                                                                                                                                                                                                                                                                                            GlyLeuSerLeuArgThrProAlaLeuValGlnAlaAlaAlaLysGlyValArgIleSer
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ValalaValGlyGlyAsnLeuGlyThrProAlaLeuAspLeuLeuAlaAspAspIleGlu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   197 AspTyrHisLeuAlaLysHisArgIlePheArgGlyAlaArgGlnValValValAsnArg
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      217 AlaAspAlaLeuThrArgProLeuIleAlaAspThrValProCysTrpSerPheGlyLeu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       AsnLysProAspPheLysAlaPheGlyLeuIleGluGluAspGlyGlnLysTrpLeuAla
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        257 PheGlnPheAspLysLeuLeuProValGlyGluLeuLysIleArgGlyAlaHisAsnTyr
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           SerAsnAlaLeuAlaLeuAlaLeuGlyHisAlaValGlyLeuProPheAspAlaMet
                                      --IleValValGlyLeuGlyLysSer
                                                                                                      GlyMetSerLeuValArgTyrLeuAlaArgArgGlyLeuProPheAlaValValAspThr
                                    SerLeulleAlaSerAspHisPheArg----
   US-09-701-229-2 (1-448) x AE008699
                                                                                                                                                                                                                                                                                                           78
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                138
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 158
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       237
                                                                                                      19
                                                                                                                                       18692
                                                                                                                                                                                                                                                                           18800
                                                                                                                                                                                                                                                                                                                                                                             98
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         277
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                οy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Ωÿ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          δλ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ŏ
                                    ŏ
                                                                  g
                                                                                                      óγ
                                                                                                                                   g
                                                                                                                                                                        ò
                                                                                                                                                                                                        g
                                                                                                                                                                                                                                          ă
                                                                                                                                                                                                                                                                       g
                                                                                                                                                                                                                                                                                                           Qγ
                                                                                                                                                                                                                                                                                                                                       g
                                                                                                                                                                                                                                                                                                                                                                     δŽ
                                                                                                                                                                                                                                                                                                                                                                                                          g
                                                                                                                                                                                                                                                                                                                                                                                                                                               ά
                                                                                                                                                                                                                                                                                                                                                                                                                                                                         셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         В
                                                                                                                                   CNMPTPANKAIVGSGAFAHSSGIHQDGVLKNRENYEIMTPESIGLNOIQLNLTSRSGR
AVRHRMERENGKRDTDVNMDHLYDAFRLADKKGQVPDYDLEALAFINKQGEPEHR
LDYFSVGSGSSDIATASVKLAGCGEEKARBANGNGPYDAIVGAINTITGYDVELVKYD
LNAKGGKDALGQVDIVVNHHGRRFHGVGLATDIVESSARAMYHVLNNIWRAAEVEKE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      TLGMSQPAVSNAVARLKVMFNDELFVRYGRGIQPTARAFQLFGSVRQALQLVQNELPG
SGFEPTSSERVFNLCVCSPLDN1LTSQIYRRYGRIAPNITAPNHVFKASLNQNTERQLRYQ
ETFVISYEFFRPFFSPPFPVBVLFKDEMVLVASRKHPRISGPLLEGDVYNEQHAVVSLDR
YASFSQPWYDTPDRQSSVAXQGMALISVLNVVSQTHLVAIAPRWLAEFFAESLDLQIL
PLPLKLNSRTCYLSWHEAAGRDKGHQWMEDLLVSVCKR"
                                                   /translation="MSQQVIIFDTTLRDGEQALQASSAKEKLQIALALERMGVDVME
VGFPVSSPGDFESVQTIARTIKNSRVCALARCVEKDIDVAAQALKVADAFRIHTFIAT
SPMHIATKLRSTLDEVIERAVYMVKRARNYTDDVEFSCEDAGRTPVDDLARVVEAAIN
                                                                                                    AGARTINIPDTVGYTMPFEFAGIISGLYERVPNIDKAIISVHTHDDLGIAVGNSLAAV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         /translation="MPEVKTEKPHLLDMGKPQLRMVDLNLLTVFDAVMQEQNITRAAH
                                                                                                                       HAGARQVEGAMNGIGERAGNCALEEVIMAIKVRKDIMNVHTNINHHEIWRTSQTVSQI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               RegulonDB:STMS1H000494"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  note-"putative RBS for leu0; RegulonDB:STMS1H000495"
810. .6754
                                                                                                                                                                                                                                                         RegulonDB:STMS1H000492'
                                                                                                                                                                                                                                                                                                           RegulonDB:STMS1H000493'
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         operon
                                                                                                                                                                                                                                                                                                                                                                                                               (SW:LPL_SALTY)"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   /product-"putative LysR family transcriptional
/protein_id-"AAL19079.1"
/db_xref-"GI:16418614"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     activator protein in leuabcd
                                                                                                                                                                                                                                                                                                                                                                                                                                           /transl_table=11
/product="leu operon leader peptide"
/protein_id="AaL19078.1"
/db_xrefn_id="G1:16418613"
/translation="MSHIVRFTGLLLLNAFIVRGRPVGGIQH"
/product="2-isopropylmalate synthase"
/protein_id="AAL19077.1"
/db_xref="G1:16418612"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              /note-"putative -35_signal for leuL;
RequionDB:STMLTH004472"
5798. .6754
/gene-"leuO"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                for leuL;
                                                                                                                                                                                                                                                                                                                                                                                                          'note-"leu operon leader peptide.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Conservative:
Mismatches:
                                                                                                                                                                                                                      complement(3417. .3422)
/gene_"louB"
/note="putative RBS for leuB;
complement(4994. .4999)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            /note="putative RBS for leuL;
complement(5271. .5279)
                                                                                                                                                                                                                                                                                                         'note="putative RBS for leuA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             /note="putative -10_signal
RegulonDB:STMLTH004472"
complement(5290. ,5298)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Matches:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Length:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Indels:
                                                                                                                                                                                                                                                                                                                                                       /note="synonym: STW0114"
complement(5067. .5153)
/gene="leut"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    'note="synonym: STM0115"
                                                                                                                                                                                                                                                                                                                         complement(5067. .5298)
/gene="leut"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              complement(5162, .5167)
                                                                                                                                                                                                      LORKAONKENNKETV"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     /note="probable a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        /transl_table=11
                                                                                                                                                                                                                                                                                                                                                                                                                                 codon_start=1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        /codon_start=
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             gene-"leur"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  'gene="leuL"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    5798, .5803
/gene="leuo"
                                                                                                                                                                                                                                                                                      /gene="leuA"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       /gene="leu0"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           1.55e-54
987.00
63.96%
50.99%
43.67%
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   /gene="leuL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          6941. .6953
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Percent Similarity:
Best Local Similarity:
Query Match:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            protein_bind
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Alignment Scores:
Pred. No.:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               -10_signal
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              -35_signal
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   gene
                                                                                                                                                                                                                                                                                                                              gene
                                                                                                                                                                                                                        RBS
                                                                                                                                                                                                                                                                         RBS
                                                                                                                                                                                                                                                                                                                                                                            CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                RBS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    RBS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      CDS
```

```
/note-"p
1196. .2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Percent Similarity:
Best Local Similarity:
Query Match:
                                                                                                                                                                                                                                                                                                                                                                                                   530
                                                                                                                                                                                                                                                                                                                                                                                                                                               Alignment Scores:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   N
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             19
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        39
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             1595
                                                                               promoter
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          158
                                                                                                        promoter
                                                                                                                                                                                                                                                                                                                                                                                               BASE COUNT
ORIGIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                               ..
8
                                                                                                                                                                     CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Score:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               요
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ò
                                                                                                                                                                                                                                 CTAAACGGTTTG-----CATGTGGACGGTACGCTACATCTGCTGCTGGCGGCGCGACGGT 19684
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       /protein_id="cAa35932.1"
/protein_id="cAa35932.1"
/db_xref="G1:42059";
/db_xref="SHISS-PROTEINSTRATEINSTRATEISLWMGPRW
/translation="HUWHARHIVKYYSGFNVFSYLTFRAIVSLLTALFISLWMGPRW
IAHLQKLSFGQVVRNDGPESHFSKRGTPTMGGIMILTAIVISVLLWAYPSNPYWCVL
                                                                                                                                                                                                                                                                                                                                                                    BCT 12-SEP-1993
                                                                                                                                                                                                               432
                                                                                     375 -----ValValLeuLeuGlyArgAspAlaGlyLeuIleAlaGlnAlaLeuGlyAsnAla 392
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Submitted (15-MAR-1990) Flouret B., URA 1131 du Centre National de la Recherche Scientifique, C N R S, Biochimie Moleculaire et cellulaire, Batiment 432 Universite Paris-Sud, 91405 Orsay, France Sequence independently determined by [3], but authors accept sequence [1] as definitive.
                                                                                                                                                                                                                                                                                                                                                                                                      X51584 1 GI:42058
membrane protein; murD gene;
UDP-N-acetylmuramoyl-L-alanyl-D-glutamate synthetase; unidentified
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Enterobacterlaceae; Escherichia.

1 (bases 1 to 2608)

Keda,M., Wachi,M., Ishino,F. and Matsuhashi,M.

Nucleotide sequence involving murD and an open reading frame ORF-Y spacing murF and ftsW in Escherichia coli

Nucleic Acids Res. 18 (4), 1058 (1990)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Enterobacteriales;
                                                                                                                                                                      ArgGluGlyAspAlaValLeuLeuSerProAlaCysAlaSerLeuAspMetPheLysAsn
                                                                                                                     19733 ATCCGCCTGTATTGCTTTGGGCGCGGATGGCGCGCAGCTTGCC---GCACTGCGTCCGGAA
                                                                                                                                                 ValProLeuValArgValAlaThrLeuAspGluAlaValArgGlnAlaAlaGluLeuAla
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Submitted (02-JAN-1989) Ikeda M., Institute of Applied Microbiology, The University of Tokyo, 1-1-1 Yayol, Bunkyo-ku,
                              LysGlyAlaAspPheHisAspLeuArgGluProValAlaArgPheCysArgAla--
                                                                                                                                                                                                                                                                                     PheGluGluArgGlyArgLeuPheAlaLysAlaValGluGluLeu 447
                                                                                                                                                                                                                                                                                                                                                        Escherichia coli murD gene and ORF-Y (EC 6.3.2.9).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Gammaproteobacteria;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                8. .102
note-"pot. ribosome binding site"
11. .1193
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  /organism="Escherichia coll"
/mol_type="genomic DNA"
/db_xxef="taxon:562"
/map-"2min"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               /note="ORF-Y (AA 1-360)"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Location/Qualifiers
1. .2608
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Bacteria; Proteobacteria;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               /codon_start=1
/transl_table=11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Tokyo 113, Japan
3 (bases 26 to 1354)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          (bases 1 to 2608)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Submission
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Direct Submission
                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Escherichia coli
Escherichia coli
                                                                                                                                                                                                                                                                                                                                                                                                                                                            reading frame.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Flouret, B.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Ikeda, M.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               2179861
                                                                                                                                                   393
                              357
19631
                                                                                                                                                                                                              413
                                                                                                                                                                                                                                                                       433
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          source
                                                                                                                                                                                                                                                                                                                                                                              DEFINITION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                       SOURCE
ORGANISM
                                                                                                                                                                                                                                                                                                                                                                                              ACCESSION
VERSION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   REFERENCE
AUTHORS
TITLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          PUBMED
REFERENCE
AUTHORS
TITLE
JOURNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  REFERENCE
AUTHORS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                TITLE
JOURNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            MEDLINE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              JOURNAL
                                                                                                                                                                                                                                                                                                                                  RESULT 9
                                                                                                                                                                                                                                                                                                                                                                                                                            KEYWORDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   RBS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          FEATURES
                                                                                                                                                                                                                                                                                                                                                   ECMUROY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              COMMENT
                                                                                                                                                                                                                                                                                                  셤
                              à
                                                       g
                                                                                     ò
                                                                                                                  셤
                                                                                                                                                 ö
                                                                                                                                                                         셤
                                                                                                                                                                                                           à
                                                                                                                                                                                                                                       g
                                                                                                                                                                                                                                                                     ò
```

```
/protein_id="caa35933.1"
/db_xref="G1:42060"
/db_xref="Suss-pror:p14900"
/translation="kbDYGGKNVYIGLGIJGLSCVDFFLARGVTPRVMDTRWTPPGL
DKLPEAVERHTGSLNDEWLMAADLIVASPGIALAHPSLSAAADAGIEIVGDIELFCRE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                              AQAPIYAITGSNGKSTYTTLVGEMAKAAGVNVGVGGNIGLPALMLLDDECELVYLELS
SFQLETTSSLQAVAATILNVTEDHMDRYPFGLQQYRAAKLRIYENAKVCVVNADDALT
MPIRGADERCVSFGVNMGDYHLMHQQGETWLRVKGRKVLNVKEMKLSGQHNYTNALAA
LALADAAGLPRASSLKALTTFGLPHRPEVVLEHNGYRWINDSKATNVGSTEAALNGL
HVDGTLHLLLGGDGKSADFSPLARYLNGDNVRLYCFGRDGAQLAALRPEVAEQTETME
QAMRILLAPRVQPGDWYLLSPRARSLDQFKNFEQRGNEFARLAKELG*
631 c 777 g 670 t
VVLVGYGVIGFVDDYRKVVRKDTKGLIARWRYFWMSVIALGVAFALYLAGKDTPATQL
VYPFKDVDWPDLGLEYILLAYFVIVGTGNAVNLTDGLDGLAIMFTVFAGGFALVAWA
TGNMNFASYLHIPYLRHAGELVIVCTAIVGAGLGFLWFNTYPAQVFMGDVGSLALGGA
LGIIAVLLRQFELLIYDMGSYPTLSYILQVGSFKLRGQRIFRMAPIHHYELKGWP
EPRVIVRFWIISLMLVLIGLATLKVR"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     1246
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                1414
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                1474
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           1594
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  1307 CGTATGACACCGCCTGGCCTGGATAAATTA------CCCGAAGCCGTAGAAGC 1354
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         GTTGGTGTGTGGCTGCCATATTGGCCTGCCTTGATGCTACTGGATGATGATGTGAA 1654
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           117
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        157
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           118 ASWAlaLysSerThrValThrThrLeuValGlyGluMetAlaValAlaAlaAspLysArg 137
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      LeuTyrValLeuGluLeuSerSerPheGlnLeuGluThrCysAspArgLeuAsnAlaGlu 177
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     38
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  57
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             97
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     SerLeuIleAlaSerAspHisPheArg-----IleValValGlyLeuGlyLysSer
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  1187 ACGTTAATCATGGCTGATTATCAGGGTAAAAATGTCGTCATTATCGGCCTGGGCCTCACC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         78 GlyLeuSerLeuArgThrProAlaLeuValGlnAlaAlaAlaLysGlyValArgIleSer
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         58 ArgCysGlyGluLeuAspAlaGluPheLeuCysSerAlaArgGluLeuTyrValSerPro
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        1535 AACGGCAAAAGCACGGTCACCACGCTAGTGGGTGAAATGGCGAAAGCGGCGGGGGTTAAC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ArgGluAsnProProGluLeuAlaThrLeuArgAlaGlnTyrProGln---ValGluVal
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     GlyMetSerLeuValArgTyrLeuAlaArgArgGlyLeuProPheAlaValValAspThr
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             98 GlyAspIleAspLeuPheAlaArgGluAlaLysAlaProlleValAlalleThrGlySer
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        138 ValalavalGlyGlyAsnLeuGlyThrProalaLeuAspLeuLeualaAspAspIleGlu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 2608
230
61
140
100
                                                                                                                                                                                                                                                                                           gene product (AA 1-438)"
                                                                                                                                                                                                                           pot, ribosome binding site"
2512
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Matches:
Conservative:
Mismatches:
Indels:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Length:
                                                                                                                                             -35 region"
                                                                                                                                                                                          /note="pot. -10 region"
1181. .1185
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     US-09-701-229-2 (1-448) x ECMUROY (1-2608)
                                                                                                                                                                                                                                                                                                                                        /transl_table=11
                                                                                                                                                                                                                                                                                /note="murD ge
/codon_start=1
                                                                                                                    1018. .1023
/note="pot.
1043. .1048
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           1.35e-55
986.00
63.96%
50.55%
43.63%
```

ò 셤 ò q ð g à 8 ð g ò 8 ŏ g δ 셤 δ g ò g ò 셤

8

셤

à

```
Submitted (13-OCT-1998) Laboratory of Genetics, University of Wisconsin, 445 Henry Mall, Madison, WI 53706, USA
Wisconsin, 445 Henry Mall, Madison, WI 53706, USA
Wisconsin, 445 Henry Mall, Madison, WI 53706, USA
Wisconsin, 445 Henry Mall, Madison, WI 53706, USA
Wisconsin, 445 Henry Mall, Madison, WI 53706, USA
University of Wisconsin-Madison (Frederick R. Blattner, director).
Supported by NIH grants HG00301 and HG01428 (from the Human Genome Project and WGHGR). The entire sequence was independently denome Eroject and WGHGR). The entire sequence was independently
determined from E. coli KI2 strain MG1655. Predicted open reading frames were determined using GeneWark Software, Kindly supplied by Mark Borodovsky, Georgia Institute of Technology, Allanta, GA,
30332 [e-mail: mark@amber.gatech.edu]. Open reading frames that have been correlated with genetic loci are being annotated with GS site Nos. unique ID nos. for the genes in the E. coli Genetic Stock Center (GGSC) database at Yale University, kindly supplied by Mary Berlyn. A public version of the database is accessible (http://cgsc.biology.yale.edu). Annotation of the genome sequence more useful by correlating it with other data. Comments to the authors are appreciated. Updated information will be available at the E. coli Genome Project's World Wide Web site (http://www.genetics.wisc.edu). *** The E. coli KI2 sequence and its annotations are periodically updates; updated gene identifications and products; all new functional assignments courtesy of Monica Rilley; added promoters, protein binding sites, and repeated sequence described in reference 1. The unique numeric identifiers beginning with a lowercase "b' assignment coding of products as gene synonyms instead of labels. This should allow them to be searched for in Entrez as gene
                                                                                                                                                                                                                                                         Submitted (16-JAN-1997) Guy Plunkett III, Laboratory of Genetics, University of Wisconsin, 445 Henry Mall, Madison, WI 53706, USA. Email: ecoli@genetics.wisc.edu Phone: 608-262-2534 Fax:
                                                                                                                                                                                                                                                                                                                                                                                                                                            Direct Submission
Submitted (02-SEP-1997) Guy Plunkett III, Laboratory of Genetics
University of Wisconsin, 445 Henry Mall, Madison, WI 53706, USA.
Email: ecoli@genetics.wisc.edu Phone: 608-262-2534 Fax:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Genetics
Gregor, J., Davis, N.W., Kirkpatrick, H.A., Goeden, M.A., Rose, D.J.,
Mau, B. and Shao, Y.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       /function="leader; Amino acid biosynthesis: Leucine"
/note="f28; 100 pct identical to LPL_ECOLI SW: P09149"
/codon_start=1
                                                                  The complete genome sequence of Escherichia coli K-12 Science 277 (5331), 1453-1474 (1997)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            /translation="MTHIVRFIGLLLINASSLRGRRVSGIQH"
complement(197. .226)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       /product="leu operon leader peptide"
/protein_id="AAC73186.1"
/db_xref="G1:1786263"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            coli K12"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           /mol_type="genomic DNA"
/strain="K12"
/sub_strain="Mol655"
/db_xref="taxon:8333"
/complement(77. 163)
/gene="leut"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        /organism="Escherichia
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 /note="synonym: b0075"
complement(77. .163)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 /transl_table=11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           /gene="leuL"
                                                                                                                                                                                                                                                                                                                                                                                     3 (bases 1 to 21757)
Blattner, F.R.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           4 (bases 1 to 21757)
Plunkett,G. III.
Direct Submission
                                                                                                                                                                                2 (bases 1 to 21757)
Blattner, F.R.
                                                                                                                                                                                                                                          Direct Submission
                                                                                                                                                                                                                                                                                                                                                          608-263-7459
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                promoter
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   source
                                                                                                                                                                                                                                          TITLE
JOURNAL
                                                                                                                                                                                                                                                                                                                                                                                                                    AUTHORS
TITLE
JOURNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           REFERENCE
AUTHORS
TITLE
                                                               TITLE
JOURNAL
MEDLINE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   JOURNAL
                                                                                                                                                                                                                 AUTHORS
                                                                                                                                                                                                                                                                                                                                                                                        REFERENCE
                                                                                                                                                       PUBMED
                                                                                                                                                                                   REFERENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     FEATURES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          COMMENT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               GITAAAGGCGAGAAAGTGCTGAAAGGTGAAAGTGAAACTITCCGGGCAGCATAACTAC 2005
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     BCT 01-DEC-2000
                                                                                              1895 AACATGGGTGACTATCAC-----CTGAATCATCAGCAGGCGAAACCTGGCTGCGG 1945
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               2402 CAGCCGGCGATATGCTTCTGCTCTCCCCAGCCTGTGCCAGCCTTGATCAGTTCAAGAAC 2461
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Burland, V.,
      1655 CTGTACGTGCTGGAACTGTCGAGCTTCCAGCTGGAAACCACCTCCAGCTTACAGGCGGTA 1714
                                                                                                                                                                                                                 375 -----ValValLeuLeuGlyArgAspAlaGlyLeuIleAlaGlnAlaLeuGlyAsnAla 392
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        393 ValProLeuValArgValAlaThrLeuAspGluAlaValArgGlnAlaAlaGluLeuAla 412
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        178 ValAlaThrValLeuAsnValSerGluAspHisMetAspArgTyrAsp---GlyMetAla 196
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    357 LysGlyAlaAspPheHisAspLeuArgGluProValAlaArgPheCysArgAla---- 374
                                                                                                                                                                                                                                                                                                                                                                                                                 AsnLysProAspPheLysAlaPheGlyLeuIleGluGluAspGlyGlnLysTrpLeuAla 256
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Bacteria; Proteobacteria; Gammaproteobacteria; Enterobacteriales; Enterobacteriaceae; Escherichia.
1 (bases 1 to 21757)
Blattner, F.R., Punkett, G. III, Bloch, C.A., Perna, N.T., Burland, V. Riley, M., Collado-Vides, J., Glasner, J.D., Rode, C.K., Mayhew, G.F.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          2240 AAATCGGCGGACTTT------AGCCCACTGGCGCGTTACCTGAATGGCGATAAC
                                                                                                                                                                             AspTyrHisLeuAlaLysHisArgIlePheArgGlyAlaArgGlnValValAsnArg
                                                                                                                                                                                                                                                                                                   AlaAspAlaLeuThrArgProLeuIleAlaAspThrValProCysTrpSerPheGlyLeu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 257 PheGlnPheAspLysLeuLeuProValGlyGluLeuLysIleArgGlyAlaHisAsnTyr
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   337 IleGluGlyLeuGlyAlaAspIleAspGlyLysLeuValLeuLeuAlaGlyGlyAspGly
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           2288 GTACGTCTGTATTGTTTCGGTCGTGACGCGCGCGCAGCTGGCG---GCGCTACGCCCGGAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   AE000118 21757 bp DNA linear BCT 01-DI
Escherichia coli K12 MG1655 section 8 of 400 of the complete
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       2462 TTTGAACAACGAGGCAATGAGTTTGCCCGTCTGGCGAAGGAGTTA 2506
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        PheGluGluArgGlyArgLeuPheAlaLysAlaValGluGluLeu 447
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     AE000118 U00096
AE000118.1 GI:1786262
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Escherichia coli K12
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Escherichia coli K12
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   genome
                                                                                                                                                                                                                                                                                                217
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        433
                                                                                                                                                                                197
                                                                                                                                                                                                                                                                                                                                                                                                                 237
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              DEFINITION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ORGANISM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         RESULT 10
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ACCESSION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   REFERENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   VERSION
KEYWORDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          AE000118
```

g

```
:::||||||| :::|||||:::
13533 ACGTTAATCATGGCTGATTATCAGGGTAAAAATGTCGTCGTTATCGGCCTGGGCCTCACC 13592
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 13701 CACACGGGCAGTCTGAATGAATGAATGGCTGATGGCGGCAGATCTGATTGTCGCCAGTCCC 13760
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             13653 CGTATGACACCGCCTGGCTGGATAAATTA-----CCCGAAGCCGTAGAACGC 13700
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  13761 GGTATTGCACTGGCGCATCCATCCTTAAGCGCTGCCGCTGATGCCGGAATCGAAATCGTT 13820
                                                                                                                                                                                                                                                                                                                                                                                                                                                                      TTGHKGOIKRALOTLVAAKKPVVYGGGAITAGCHQOLKETVEALNILPVVCSLAGLĞA
PFATHRQAYTVALALEANNYMHNADVIFAVGYRDDRYTYNLLAKYCDNAYVLHID
IDPTSISKTYATALIPYGDARQYLEDALELLSGESAHQPLDEIRDWQOIEGWRARQC
LKYDTHSEKIKPQAVIETLWRLTKGDAYVTSDVGQHQMFAALYYPFDKPRRMINSGGL
GYMGFGLLBAALGVKMALDEETVVCYFOGSIQUMIQELSTALQYELPVLVVNILNNRYL
GWWKQNQDMIYGGRESQXYMOSLPDFVYRLARBYGHVGIQISHPHELESKLSSALEQVR
NNRLVFVDYTVDGSEHVYPMQIRGGGMDEMMLSKTERT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       13593 GGGCTTTCCTGCGTGGACTTTTTCCTCGCTCGCGGTGACGCCGCGCGCTTATGGATACG 13652
                                                                                                                                                                                                                                                                                                                                                                                                                           VTSGPGÄTNA ITGIATAYMDSIPLVVLSGQVATSLIGYDAFQECDMVGISRPVVKHSF
LVKQTEDIPQVLKKAFWLAASGRPGPVVVDLPKDILNPANKLPYVWPESVSMRSYNPT
                                                                                                                                                                                                                                                                                                                                                                             /translation-"mFmSLaanCLSKIGRLMCFTHFFRQTVRQAMEMLSGAEMVVRSL
IDQGVKQVFGYPGGAVLDIYDALHTVGGIDHVLVRHEQAAVHMADGLARATGEVGVVL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               98 GlyAspIleAspLeuPheAlaArgGluAlaLysAlaProIleValAlaIleThrGlySer 117
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      /note="factor Sigma70; promoter ilvIHp1; documented+1 at 85597"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                SerLeuIleAlaSerAspHisPheArg-----IleValValGlyLeuGlyLysSer 18
                                                                                                                     /EC_number="4.1.3.18"
/function="enzyme; Amino acid biosynthesis: Isoleucine,
                                                                                                                                                     from Living 198 pct identical (1 gap) to 522 residues from Living ECOLI SW: P00893 (566 aa)"
                                                                                                                                                                                                                                                                                    /product="acetolactate synthase III, valine sensitive,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         GlyMetSerLeuValArgTyrLeuAlaArgArgGlyLeuProPheAlaValValAspThr
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ArgGluAsnProProGluLeuAlaThrLeuArgAlaGlnTyrProGln---ValGluVal
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ArgCysGlyGluLeuAspAlaGluPheLeuCysSerAlaArgGluLeuTyrValSerPro
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    GlyLeuSerLeuArgThrProAlaLeuValGlnAlaAlaAlaLysGlyValArgIleSer
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        /note="central position to predicted promoter:156.5"
/bound_molety="Lrp predicted site"
/gene="ilv1"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 21757
230
61
140
24
10
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Conservative:
Mismatches:
Indels:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Length:
Matches:
                                                                                                                                                                                                                                                                                                                        /protein_id="AAC73188.1"
/db_xref="G1:1786265"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Gaps:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  (1-21757)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               /note="synonym: b0078"
3812. .4303
/gene="ilvH"
/EC_number="4.1.3.18"
                                                  D0077
                                                                                                                                                                                                                                                                 /transl_table=11
                                                  note-"synonym:
                                                                                                                                                                                                                                                                                                            large subunit"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  US-09-701-229-2 (1-448) x AE000118
                                                                     1995. .3809
/gene="ilvi"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       3812. .4303
/gene="ilvH"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    1.74e-54
986.00
63.96%
50.55%
43.63%
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     1998. .2012
/gene="ilvi'
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Percent Similarity:
Best Local Similarity:
Query Match;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     protein_bind
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Alignment Scores:
Pred. No.:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         19
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    33
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             28
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      78
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                promoter
         gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       gene
                                                                          CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ద
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ŏ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     HVIGMSOPAVSNAVARIKVMENDELEVYRGROIOPTARAFOLEGSYROALOLVONELE
GSGFEPRASSERVFHLCVCSPLDSILTSOIYNHIEOTAPNIHVMEKSSLNOWTEHOLRY
OFTEFVISYEDFHRPETSVPLFKDEWVLVASKNHPTIKGPLIKHDVYNEQHAAVSLD
RFASFSOPWYDTVDROASIAYOGMAMMSVLSVVSOTHLYAIAPRWIABEFAESLELQV
1802. 1816
//note="central position to predicted promoter: -39.5"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            /protein_id="AAC73187.1"
/db_xref="G1:1786264"
/db_xref="G1:1786264"
/translation="WTHSTAMDSVFIRTRIFWFSEFYSFCFFLFYMHDKSYSSGLFLC
IPIRERELSVTVELSMPEVQTDHPETAELSKPQLRMYDLNLLTVFDAVMQEQNITRAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           24
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         1833. .1847
/note="central position to predicted promoter: -8.5"
/bound_moiety="Lrp predicted site"
1838. .1866
/note="factor Sigma70; promoter ilvIHp3; documented+1 at 85420"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   /product="probable transcriptional activator for leuABCD operon"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        at
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            1955. .1984
// note="factor Sigma70; promoter ilvIHp2; documented+1 at
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      function="putative regulator; Amino acid biosynthesis:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            /note="0373; 100 pct identical to LEUO_ECOLI SW:
P10151(290 aa) but contains 59 additional N-ter aa and
C-term residues; 100 pct identical to PTR: S40589 but
contains 24 additional C-term residues"
                                                                                                                                                                                                                                                                                                                                                                                                                                           complement(519...537)
/note="central position to predicted promoter: -319.5"
/bound_molety="TyrR predicted site"
/note="central position to predicted promoter:64"
/bound_molety="AraC predicted site"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         1813. 1839
/note="factor Sigma70; promoter ilvIHp4; documented+185394"
                                                                                                                                                                                                                                                                                                                          460. .474
/note="central position to predicted promoter: -28.5"
/bound_moiety="Lrp predicted site"
                                                                                                                                           promoter: -0.5"
                                                                                                                                                                                                                                                                               /note="central position to leuABCD promoter: -156.5" /bound_molety="Lrp documented site"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             1978. .1992
/note="central position to predicted promoter:136.5"
/bound_molety="Lrp predicted site"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    1949. 1963
// Anote "central position to predicted promoter:107.5"
// Dound_molety="Lrp predicted site"
                                                                                                                                                                                                                                                                                                                                                                                              462...490
/note="factor Sigma70; predicted +1 start at 84042"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             note="central position to predicted promoter:73.5"
bound_molety="Lrp predicted site"
/note="factor Sigma70; promoter leu; documented +1 at83735" complement(201. .221)
                                                                                                                                      /note="central position to predicted found_moiety="lexA predicted site" complement(334..368)
/note="No predicted promoter" found_moiety="Lrp documented site" complement(354..368)
                                                                                             /bound_molety="LexA predicted site"
complement(201, .221)
                                                                   'note="No predicted promoter"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  note="synonym: b0076"
                                                                                                                     complement(201.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  /transl_table=11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       646. .1767
/qene="leuo"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              gene="leu0"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Leucine
                                                protein_bind
                                                                                                                   protein_bind
                                                                                                                                                                                      protein_bind
                                                                                                                                                                                                                                                                                                                             protein_bind
                                                                                                                                                                                                                                                                                                                                                                                                                                              protein_bind
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 protein_bind
                                                                                                                                                                                                                                                            protein_bind
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          protein_bind
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 protein_bind
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     protein_bind
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         protein_bind
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             protein_bind
                                                                                                                                                                                                                                                                                                                                                                                                   promoter
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           promoter
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    promoter
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            promoter
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        CDS
```

57

97

DEFINITION AX191720 28277 bp DNA linear PAT 15-AUG-2001 ACCESSION AX191720 AX191720 AX191720 VERSION AX191720.1 GI:15209889 KEYWORDS SOURCE Escherichia coli CORGANISM Escherichia coli Batteria; Proteobacteria; Gammaproteobacteria; Enterobacteriales; Enterobacteriaceae; Escherichia.  REFERENCE AUTHORS IVETSEN, D.L. TITLE ALLISESSE ANTISACTERIA COLI GIVISION COMPOSITION and method JOURNAL Patent: WO 0149775-A 2 12-JUL-2001; AVI BIOPHARMA, INC. (US) I. 28277 AVI BIOPHARMA, INC. (US) I. 28277 AVI BIOPHARMA, INC. (US) I. 28277 AVI BIOPHARMA, INC. (US) II. 28277 AVI BIOPHARMA, INC. (US) II. 28277 ANTICE ALISESCOUNT (MS) AVI BIOPHARMA, INC. (US) II. 28277 ANTICE ALISESCOUNT (MS) AVI BIOPHARMA, INC. (US) II. 28277 ANTICE ALISESCOUNT (MS) AVI BIOPHARMA, INC. (US) III. 28277 ANTICE ALISESCOUNT (MS) AVI BIOPHARMA, INC. (US) III. 28277 ANTICE ALISESCOUNT (MS) AVI BIOPHARMA, INC. (US) AVI BIOPHARMA, INC. (US) AVI BIOPHARMA, INC. (US) AVI BIOPHARMA, INC. (US) III. 28277 ANTICE ALISESCOUNT (MS) AVI BIOPHARMA, INC. (US) A	res:     2.39e-54	13668 GGGCTTTCTGCGTGGACTTTTCCTCGCTCGGTGTGACGCCGCGCTTATGCATACG  39 ArgGluAsnProProGILEuNAlaThrLeuArgAlaGlnTyrProGInValGIuVal  11	Qy 118 AsnBalysSarg 137
	0y 217 AlaAspalaLeuThrArgProLeuIleAlaAspThrValProCysTrScSTGSTAATGCT 14180 0y 217 AlaAspalaLeuThrArgProLeuIleAlaAspThrValProCysTrpSerPheGlyLeu 236 1181	297 LeuGlyAlaLeuLysAlaPheSerGlyLeuAlaHisArgCySGInTrPValArgGluArg	Db 14634 GTACGTCTGTATTGGTCGCCGCGCGCGCGCGCGCGCGCAGA 14690  393 ValProLeuValArgValAlaThTE-LASpGLALaValArgGlnAlaAlaGluLeuAla 412  11

```
Ayala J.A.;
"Regulation of trans:
Escherichia coll.";
Unpublished.
                                                                                                                             82078077.
                                                                                                                                                                                                                                                                                                                                      MEDLINE; 85234358.
PUBMED; 3891724.
                                                                                                                                                                                                                                                                                                                                                                                                      MEDLINE; 83272971.
PUBMED; 6308579.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                             MEDLINE; 90330585.
                                                                                                                                                                                                                                                                          MEDLINE; 88320486.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   MEDLINE; 90251464
                                                                                                                                      6171647
                 Ayala J.A.;
                                                                                                                                                                                                                                                                                                                       [6]
1799-2187
                                                                                                                                                                                                                                                                                                                                                                                                                                                              [8]
4274-6093
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   [9]
6088-7587
                                                                                                                                                                                                                                                                                                                                                                                               2101-4431
                                                                                                                                                                                     [4]
268-1130
                                                                                                                              MEDLINE;
                                                                                                                                      PUBMED;
         1-28277
                                                                                                                      -306
                                                                                                                                                                                                                                                          [2]
 LeuGlyalaLeuLysAlaPheSerGlyLeuAlaHisArgCysGlnTrpValArgGluArg 316
                                                                                                                                                                                                                                  14660
                                                                                                                                                                                                                                                                                                                                                      14823 CAGCCGGCGATATGGTTCTGCTCCCCCAGCCTGTGCCAGCCTTGATCAGTACAAGAAC 14882
                                     GATGATGCCTTAACAATGCCGATTCGCGGTGCGGATGAACGCTGCGTCTAGCGTC 14315
                                                                                                                                                                                           14765
                                                                                                                                                                                                                                                                                                                                14822
                                                                                                                                                                                                                                                                 14708
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ftsW gene; ftsZ gene; ilvH gene;
murC gene; murD gene;
orfA; orfB; orfC; orfX;
                                                       256
                                                                                                                                                                                     336
                                                                                                                                                                                                                   356
                                                                                                                                                                                                                                                  374
                                                                                                                                                                                                                                                                                                                412
                                                                                                                   AACATGGGTGACTATCAC------CTGAATCATCAGCAGGCGAAACCTGGCTGCGG
                                                                                               AsnLysProAspPheLysAlaPheGlyLeuIleGluGluAspGlyGlnLysTrpLeuAla
                                                                                                                                                                                                                337 IleGluGlyLeuGlyAlaAspIleAspGlyLysLeuValLeuLeuAlaGlyGlyAspGly
                                                                                                                                                                                                                           ::: ||||||| :::|||||||| CTGAATGGCCTG-----CACGTAGACGCAACACTGCATTTGTTGCTGGGTGGCGATGGT
                                                                                                                                                                                                                                                                                          14709 GTACGTCTGTATTGTTTCGGTCGTGACGCGCGCACTGGCG---GCGCTACGCCCGGAA
                      AlaAspAlaLeuThrArgProLeuIleAlaAspThrValProCysTrpSerPheGlyLeu
                                                                                     PheGlnPheAspLysLeuLeuProValGlyGluLeuLysIleArgGlyAlaHisAsnTyr
                                                                                                                                                                                   317 GlnGlyValSerTyrTyrAspAspSerLysAlaThrAsnValGlyAlaAlaLeuAlaAla
                                                                                                                                                                                                                                                LysGlyAlaAspPheHisAspLeuArgGluProValAlaArgPheCysArgAla----
                                                                                                                                                                                                                                                                                -----ValValLeuLeuGlyArgAspAlaGlyLeuIleAlaGlnAlaLeuGlyAsnAla
                                                                                                                                                                                                                                                                                                              393 ValProLeuValArgValAlaThrLeuAspGluAlaValArgGlnAlaAlaGluLeuAla
                                                                                                                                                                                                                                                                                                                                              413 ArgGluGlyAspAlaValLeuLeuSerProAlaCysAlaSerLeuAspMetPheLysAsn
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Escherichia coli
Bacteria; Proteobacteria; Gammaproteobacteria; Enterobacteriales;
Enterobacteriaceae; Escherichia.
                                                                                                                                                                                                                                                                                                                                                                                      PheGluGluArgGlyArgLeuPheAlaLysAlaValGluGluLeu 447
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    31)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  envA gene; ftsA gene; ftsQ gene; f
LeuA gene; leuO gene; mraY gene;
murF gene; murG gene; mutT gene;
secA gene; shl gene.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Version
                                                                                                                                                                                                                                                                                                                                                                                                                              BP
                                                                                                                                                                                                                                                                                                                                                                                                                             DNA; PRO; 28277
                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Created)
Last updated,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   coli 2 minute region
                                                                                                                                                                                                                                                                                                                                                                                                                                                                            27,
60,
                                                                                                                                                                                                                                                                                                                                                                                                                             standard;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                            (Rel.
                                                                                                                                                                                                                                                                                                                                                                                                                                             M10429;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                           21-FEB-1991
05-JUL-1999
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   gene;
gene;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            gene;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ddl gene;
                                                                                     257
                                                     237
                                                                     14316
                                                                                                                     277
                                                                                                                                                   297
                                                                                                                                                                  14487
                                                                                                                                                                                                                                                357
                                                                                                                                                                                                                                                                                375
                                                                                                                                                                                                                                                                                                                                                                             433
                      217
                                                                                                                                    14427
                                                                                                                                                                                                                                14607
                                                                                                                                                                                                                                                                                                                                                                                            14883
                                                                                                                                                                                                                                                                                                                                                                                                                                                            X55034.1
                                                                                                                                                                                                                                                                                                                                                                                                                                           X55034;
                                                                                                                                                                                                                                                                                                                                                                                                                            EC2MIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           11vI
murE
pbpB
                                                                                                                                                                                                                                                                                                                                                                                                             RESULT 12
                                                                                                                                                                                                                                                                                                                                                                                                                      EC2MIN
                                                                     셤
                                                                                                                                                                 g
                                                                                                                                                                                                                                요
                                                                                                                                                                                                                                                                                                                             g
       용
                      ð
                                      g
                                                     ö
                                                                                     ð
                                                                                                 셤
                                                                                                                    õ
                                                                                                                                  g
                                                                                                                                                  ŏ
                                                                                                                                                                                  ò
                                                                                                                                                                                                  d
                                                                                                                                                                                                                à
                                                                                                                                                                                                                                                ò
                                                                                                                                                                                                                                                               g
                                                                                                                                                                                                                                                                               ò
                                                                                                                                                                                                                                                                                              셤
                                                                                                                                                                                                                                                                                                              ò
                                                                                                                                                                                                                                                                                                                                              à
                                                                                                                                                                                                                                                                                                                                                            ò
                                                                                                                                                                                                                                                                                                                                                                                            셤
```

```
μŢ
Submitted (08-JAN-1991) to the EMBL/GenBank/DDBJ databases.
Ayala J.A., Instituto de Biologia Molecular, Centro de Biologia Molecular,
Universidad Autonoma, Canto-Blanco 28049, Madrid, Spain.
                                                                                                                                                                                                               οţ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               new gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Escherichia
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Wessler S.R., Calvo J.M.;
"Control of leu operon expression in Escherichia coli by a transcription attenuation mechanism";
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         11vG
                                                                                                                                                                                                                   щар
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            두
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  MEDLINE; 86223773...
PUBMED: 3519576.
Haughn G.W., Wessler S.R., Gemmill R.M., Calvo J.M.;
High A + T content conserved in DNA sequences upstream of leuABCD - Bschericha coll and Salmonella typhimurium";
J. Bacteriol. 166(3):1113-1117(1986).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Squires C.H., DeFelice M., Devereux J., Calvo J.M.;
"Molecular structure of ilvIH and its evolutionary relationship to
Escherichia coli";
Nucleic Acids Res. 11(15):5299-5313(1983).
                                                                                                                                                                                                               the genetic
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Haughn G.W., Squires C.H., DeFelice M., Largo C.T., Calvo J.M.; "Unusual organization of the ilvIH promoter of Escherichia coli"; J. Bacteriol. 163(1):186-198(1985).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       PUBMED: 2198273.

Leclerc G., Noel G., Drapeau G.;

Leclerc G., Noel G., Drapeau G.;

"Molecular cloning, nucleotide sequence and expression of shl, a in the 2-minute region of the genetic map of Escherichia coll";

J. Bacteriol. 172(8):4696-4700(1990).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Gomez M.J., Fluoret B., Van Heijenoort J., Ayala J.A.;
"Nucleotide sequence of the regulatory region of pbpB gene of
                                                                                                                                                                                                               transcription at the 2-minute region of
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              PUBMED; 3413113,
Henlkoff S., Haughn G.W., Calvo J.M., Wallace J.C.;
"A large family of bacterial activator proteins";
Proc. Natl. Acad. Sci. U.S.A. 85(18):6602-6606(1988).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         coli";
Nucleic Acids Res. 18:2813-2813(1990)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  arrenuation mechanism";
J. Mol. Biol. 149(4):579-597(1981).
```

```
[19]
19464-21952
MEDLINE; 85054557.
PUBMED; 6094474.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Percent Similarity:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Alignment Scores:
                                                                                                                                                                                              [20]
21464-23333
                                                                                                                                                                                                                                                                                                                                                                                22964-25011
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           78
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  86
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Query Match:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Best Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ..
9
 g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                qq
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ŏ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  MEDILE: 89345095.

Parquet C., Fluoret B., Menguin-Lecreulx D., Van Heijenoort J.;

"Nucleotide sequence of the murf gene encoding the UDP-MurNac- pentapeptide
synthetase of Escherichia coll";
Nucleic Acids Res. 17:5379-5379(1989).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Ikeda M., Wachi M., Ishino F., Matsuhashi M.;
"Nucleotide sequence involving murD and an open reading frame orf-Y spacing
murF and ftsW in Escherichia coli";
Nucleic Acids Res. 18:1058-1058(1990).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Ikeda M., Wachi M., Jung H.K., Ishino F., Matsuhashi M.;
*Nucleotide sequence involving murG and murC in the mra gene cluster region
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Menguin-Lecreulx D, Van Heijenoort J.;
Mucleotide sequence of the murb gene encoding the UDP-MurNac- L-Ala-D-gly
synthetase of Escherichia coll";
Nucleic Acids Res. 18:183-183(1990).
                                                                                                                                                                                                                                                                                                                                       pubMED; 2198024.

Michaud C., Parquet C., Flouret B., Blanot D., Van Heijenoort J.;

"Revised interpretation of the sequence containing the murE gene encoding the UDP-N-acetylmuramyl-trippelide synthetase of Escherichia coli";
Blochem. J. 269(1):277-278(1990).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             coli";
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             "Structural similarity among Escherichia coli FtsW and RodA proteins and Bacillus subtilis SpoVE protein, which function in cell division, cell elongation, and spore formation, respectively";
J. Bacteriol. 171(11):6375-6378(1989).
                                                                                       Hirota Y.;
                                                                          PUBMED; 0.350841.
Nakamura M., Maruyama I.N., Soma M., Kato J.I., Suzuki H., Hirota Y.;
"On the process of cellular division in Escherichia coli: nucleotide
sequence of the gene for penicillin-binding protein 3.";
Mol. Gen. Genet. 191(1):1-9(1983).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Escherichia
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Kobayashi Y.,
                                                                                                                                                                                                                              Tao JS., Ishiguro B.E.; "Nucleotide sequence of the murE gene of Escherichia coli"; Can. J. Microbiol. 35(11):1051-1054(1989).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            of
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Menguin-Lecreulx D., Texier L., Van Heijenoort J.; "Nucleotide sequence of the cell-envelope murG gene Nucleic Acids Res. 18:2810-2810(1990).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Ikeda M., Sato T., Wachi M., Jung H.K., Ishino F.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Nucleic Acids Res. 18:4014-4014(1990)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Escherichia coli"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        MEDLINE; 90036736.
PUBMED; 2509435.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    MEDLINE; 90326550.
                                                  83296957.
                                                                                                                                                                                             MEDLINE; 90124047.
PUBMED; 2692800.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    MEDLINE; 90192099.
                                                                                                                                                                                                                                                                                                                        90328986.
                                                MEDLINE; 832969:
PUBMED; 6350821
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Matsuhashi M.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               12423-15030
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             13392-15020
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       14743-16239
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        6094-17806
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   6094-18886
                                                                                                                                                                                                                                                                                                                                                                                                                                                                     11142-12634
                                 7316-10074
                                                                                                                                                                                                                                                                                                                      MEDLINE;
```

```
:::||||||| :::||||:::
13608 ACGTTAATCATGCTGATTATCAGGTAAAAATGTCGTCATTATCGGCCTGGGCCTCACC 13667
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ||||::::::|||
|13836 GGTATTGCACTGGCGCATCCTTAAGCGCTGCCGCTGATGCCGGAATCGAAATCGTT 13895
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         13728 CGTATGACACCGCCTGGCTGGATAAATTA-------CCCGAAGCCGTAGAACGC 13775
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              117
                                              essential cell division
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              18
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                38
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          97
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     57
Robinson A.C., Kenan D.J., Hatfull G.F., Sullivan N.F., Spiegelberg R.,
Donachie W.D.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            SerLeuIleAlaSerAspHisPheArg-----IleValValGlyLeuGlyLysSer
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                19 GlyMetSerLeuValArgTyrLeuAlaArgArgGlyLeuProPheAlaValValAspThr
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     39 ArgGluAsnProProGluLeuAlaThrLeuArgAlaGlnTyrProGln---ValGluVal
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       58 ArgCysGlyGluLeuAspAlaGluPheLeuCysSerAlaArgGluLeuTyrValSerPro
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          GlyLeuSerLeuArgThrProAlaLeuValGlnAlaAlaAlaLysGlyValArgIleSer
                                                                                                                                                                                                                                                                of
                                                                                                                                                                                                                                                             of the essential cell-division gene ftsZ
                                            "DNA sequence and transcriptional organization of essential cell of genes fixed and fixes of Escherichia coli: evidence for overlapping transcriptional units."

J. Bacteriol. 160(2):546-555(1984).
                                                                                                                                                                                                                                                                                                                                                                                                                                                             "Sequence analysis, transcriptional organization, and insertional mutagenesis of the envA gene of Escherichia coli"; J. Bacteriol. 169(12):5408-5415(1987).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Length:
Matches:
Conservative:
Mismatches:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      .;
.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    I., Oliver
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Indels:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   US-09-701-229-2 (1-448) x EC2MIN (1-28277)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Schmidt M., Rollo E., Grodberg
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                2.39e-54
986.00
63.96%
50.55%
43.63%
                                                                                                                                                                                                                                       Yi Q.M., Lutkenhaus J.;
"The nucleotide sequence
                                                                                                                                                                                                                                                                                    Escherichia coli";
Gene 36(3):241-247(1985)
                                                                                                                                                                                                                                                                                                                                                                                                                                         Beall B., Lutkenhaus J.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                [22]
23989-27799
MEDLINE; 88298644.
PUBMED; 2841285.
                                                                                                                                                                                                                                                                                                                                                                                          MEDLINE; 88058745.
PUBMED; 2824434.
                                                                                                                                                                                               MEDLINE; 86083166.
PUBMED; 3000876.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Similarity:
```

rpsT; yaaC; ileS; lspA; yaaD; lytB; yaaF; dapB; carA; pyrA; carB; yaaV; calL; calD; calA; suAA; imP; ostA; yabF; kefC; trkC; folA; turA; apaH; apaG; pddA; surA; imp; ostA; yabB; yabD; yabD; yabD; yabD; yabD; jabX; ltpA; yabN; yabM; leuD; leuC; leuB; leuA; leuLP; lueO; llvI; llvH; brnP; shI; fruR; yabB; yabC; ftsL; pppB; ftsI; murE; murF; mra; mrax; murX; murC; ftsW; murG; murC; ddl; ddlB; ftsO; ftsA; dlvA; ftsZ; sflB; sulB; lpxC; envA; asmB; yacA; secA; prlD; azI; pea; mutT; yacG; htgA; htpY; yaaI; nhaR; antO; calF; fixB; yaaU; paD; pea; mutT; yacG; htgA; htpY; yaaI; nhaR; antO; calF; fixB; gaCherichia coli  # Escherichia coli # Bacteria; Proteobacterla; Gammaproteobacterla; Enterobacterlales; Enterobacterlaceae; Escherichia.	Oltsubo, H. and Ohtsubo, E. Nucleotide sequence of an insertion element, IS1 Nucleotide sequence of an insertion element, IS1 Nucleotide sequence of u.S.A. 75 (2), 615-619 (1978) 78137003 273224 Smith, B.R. and Schleif, R. Smith, B.R. and Schleif, R. Nucleotide sequence of the Larabinose regulatory region of Escherichia coli K12 J. Biol. Chem. 253 (19), 6931-6933 (1978) 79005683	357433 3 Greenfield, L., Boone, T. and Wilcox, G. Greenfield, L., Boone, T. and Wilcox, G. DNA sequence of the araBAD promoter in Escherichia coli B/r Proc. Nati. Acad. Sci. U.S.A. 75 (10), 4724-4728 (1978) 79116194 368797 4 Johnsrud, L. DNA sequence of the transposable element IS1 Mol. Gen. Genet. 169 (2), 213-218 (1979)	79177885 375010 5. Smith, D.R. and Calvo Nucleotide sequence reductase Nucleic Acids Res. 8 81053692 6159575	Ogden, S., Haggerty, D., Stoner, C.M., Kolodrubetz, D. and Schleif, R. The Escherichia coli L-arabinose operon: binding sites of the requlatory proteins and a mechanism of positive and negative regulation Proc. Natl. Acad. Sci. U.S.A. 77 (6), 3346-3350 (1980) 6251457	Katinka, M., Cossart, P., Sibilli, L., Saint-Girons, I., Chalvignac, M.A., Le Bras, G., Cohen, G.N. and Yaniv, M. Nucleotide sequence of the thra gene of Escherichia coli Proc. Natl. Acad. Sci. U.S.A. 77 (10), 5730-5733 (1980) 81077247 7003595 M. Vada, C. G. Horwitz & H. Cass. F. G. Timko, J. and Willow G.	DNA sequence of the araC regulatory gene from Escherichia coll B/r Nucleic Acids Res. 8 (22), 5267-5274 (1980) 81124262 7008027 9008027 9008027 9008027 82 82 82 82 82 82 82 82 82 82 82 82 82
SOURCE	REFERENCE AUTHORS TITLE DOURNAL MEDLINE AUTHORS TITLE JOURNAL MEDLINE MEDLINE MEDLINE MEDLINE	PUBMED REFERENCE AUTHORS TITLE JOURNAL MEDLINE PUBMED REFERENCE TITLE JOURNAL	MEDLINE PUBMED REFERENCE AUTHORS TITLE JOURNAL MEDLINE PUBMED	ACTECRACE ACTION TITLE TITLE JOURNAL MEDLINE PUBMED REFERRINGE	AUTHORS TITLE JOGRNAL MEDLINE PUBMED REFERENCE AUTHORS	TITLE JOURNAL MEDLINE PUBMED REFERENCE AUTHORS TITLE JOURNAL
138 ValAlavalGlyGlyAsnLeuGlyThrProAlaLeuAspLeuLeuAlaAspAspIleGlu 157	217 AlaAspAlaLeuThrArgProLeuIleAlaAspThrValProCysTrGCGTGGTTAATGCT 217 AlaAspAlaLeuThrArgProLeuIleAlaAspThrValProCysTrpSerPheGlyLeu 111111111111111111111111111111111111	Oy 277 SerAsnAlaLeuAlaaLeuAlaLeuGlyHisAlaValGlyLeuProPheAspAlaMet 296 277 SerAsnAlaLeuAlaaLeuAlaaLeuGlyHisAlaValGlyLeuProPheAspAlaMet 296 277 SerAsnAlaLeuAlaaLeuAlaaLeuGlyHisAlaValGlyLeuProPheAspAlaMet 296 277 SerAsnAlaLeuAlaaLeuGlyHisAlaAlaaAlaaAcacacacacacacacacacacacacaca	14547 AACGGCGTACGTTGGATTAACGATTCGAAAGCGACCAACGTCGGAGTACGGAAGCGGCG 14606   Qy	375ValvalLeuLeuGlyArgAspAlaGlyLeuIleAlaGlnAlaLeuGlyAsnAla :::	Qy         413 ArgGluGlyAspAlaValLeuLeuSerProAlaCysAlaSerLeuAspMetPheLysAsn 432           Db         14823 CAGCCGGCGATATGGTTCTCCTCTCCCCAGCCTGGCCAGCCTTGATCAGAAC 14882           Qy         433 PheGluGluArgGTYATGLeuPheAlaLysAlaValGluGluCluLeu 447           IIIIII::IIIIII         IIIIIII::IIIII	ECO110K LOCUS ECO110K LOCUS ECO110K LOCUS ECO110K ECO110K ECO110K DIPERINTION ESCHETICHIA COLI GENOMIC DNA. (0.0 - 2.4 min). ACCESSION D10483 J01597 J01683 J01706 K01298 K01990 M10420 M10611 M12544 VO0259 X04711 X54847 X54945 X55034 X56742 VERSION , D10483.2 G1:21321891 VERSION , D10483.2 G1:21321891 KEYWORDS COMPLETE and shotgun sequencing; thrA; thrAl; thrB; thrC; YaaA; YaaA; YaaJ; talB; mog; chlG; dnaK; dnaJ; grOP; gef; nhaA; ant;

fri Aug

```
96907 CACACGGGCAGTCTGAATGATGAATGGCTGATGGCGGCAGATCTGATTGTCGCCAGTCCC 96966
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      96739 ACGTTAATCATGGCTGATTATCAGGTAAAATGTCGTCATTATCGGCCTGGGCCTCACC 96798
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           96859 CGTATGACACCGCCTGGCCTGGATAAATTA-------CCCGAAGCCGTAGAACGC 96906
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Structure of the DNA distal to the gene for ribosomal protein S20 in Escherichia coli K12: presence of a strong terminator and an IS1
              Friedberg, D., Rosenthal, E.R., Jones, J.W. and Calvo, J.M. Characterization of the 3' end of the leucine operon of Salmonella typhimurium
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               of
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      38
                                                                                                                                                                                                    Escherichia coli heat shock gene promoters U.S.A. 82 (9), 2679-2683 (1985)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Sekiguchi, T., Ortega-Cesena, J., Nosoh, Y., Ohashi, S., Tsuda, K. and
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     SerLeuIleAlaSerAspHisPheArg-----IleValValGlyLeuGlyLysSer 18
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    57
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ArgCysGlyGluLeuAspAlaGluPheLeuCysSerAlaArgGluLeuTyrValSerPro 77
                                                                                                                                                                Cowing, D.W., Bardwell, J.C., Craig, E.A., Woolford, C., Hendrix, R.W.
                                                                                                                                                                                                                                                                    Chong, P., Hui, I., Loo, T. and Gillam, S.
Structural analysis of a new GC-specific insertion element IS186
FEBS Lett. 192 (1), 47-52 (1985)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             DNA and amino-acid sequences of 3-isopropylmalate dehydrogenase of Bacillus coagulans. Comparison with the enzymes of Saccharomyces cerevisiae and Thermus thermophilus
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ArgGluAsnProProGluLeuAlaThrLeuArgAlaGlnTyrProGln---ValGluVal
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   GlyMetSerLeuValArgTyrLeuAlaArgArgGlyLeuProPheAlaValValAspThr
                                                                                                                                                                                                                                                                                                                                                                                                                            Birnbaum, M.J., Haspel, H.C. and Rosen, O.M.
Cloning and characterization of a cDNA encoding the rat brain glucose-transporter protein
Proc. Natl. Acad. Sci. U.S.A. 83 (16), 5784-5788 (1986)
86287338
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Ohki,M., Tamura,F., Nishimura,S. and Uchida,H. Nucleotide sequence of the Escherichia coli dnay purification of the gene product J. Bioll. Chem. 261 (4), 1778-1781 (1986) 86111849
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Nucleic Acids Res. 14 (17), 6965-6981 (1986)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Length:
Matches:
Conservative:
Mismatches:
Indels:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Biochim. Biophys. Acta 867, 36-44 (1986)
                                                                                1. Gen. Genet. 199 (3), 486-494 (1985)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               US-09-701-229-2 (1-448) x EC0110K (1-111408)
                                                                                                                                                                                                Consensus sequence for
Proc. Natl. Acad. Sci.
85190560
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 1.25e-53
986.00
63.96%
50.55%
43.63%
                                                                                                                                                                                   and Gross, C.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Mackie, G.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Percent Similarity:
Best Local Similarity:
                                                                                                 85295470
                                                                                                                                                                                                                                                                                                                                                                                        3996940
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   3016720
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    3003084
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       element
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Alignment Scores:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      13
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    39
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    28
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Query Match:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Pred. No.:
                                                                                                 MEDLINE
PUBMED
                                                                                                                                                                                                                                                                                                                                                                                                                            AUTHORS
TITLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         JOURNAL
REFERENCE
                                                                                                                                                                                                                                                                                                                           TITLE
JOURNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            AUTHORS
  REFERENCE
                                                                                JOURNAL
                                                                                                                                           REFERENCE
                                                                                                                                                                AUTHORS
                                                                                                                                                                                                                           JOURNAL
                                                                                                                                                                                                                                                                 PUBMED
                                                                                                                                                                                                                                                                                    REFERENCE
                                                                                                                                                                                                                                                                                                            AUTHORS
                                                                                                                                                                                                                                                                                                                                                                     MEDLINE
                                                                                                                                                                                                                                                                                                                                                                                        PUBMED
                                                                                                                                                                                                                                                                                                                                                                                                           REFERENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         JOURNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              MEDLINE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   PUBMED
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      REFERENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       AUTHORS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   AUTHORS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            JOURNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       REFERENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          JOURNAL
                                        TITLE
                                                                                                                                                                                                    TITLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    TITLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               TITLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               TITLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Score:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ŏ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ŏ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ò
                                   Lee, N.L., Gielow, W.O. and Wallace, R.G.
Mechanism of araC autoregulation and the domains of two overlapping
promoters, Pc and PBAD, in the L-arabinose regulatory region of
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                nnis, M.A., Tokunaga, M., Williams, M.E., Loranger, J.M., Chang, S.Y.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Kamio,Y., Lin,C.K., Regue,M. and Wu,H.C.
Characterization of the lleS-lsp operon in Escherichia coli.
Identification of an open reading frame upstream of the lleS gene
and potential promoter(s) for the lleS-lsp operon
J. Biol. Chem. 260 (9), 5616-5620 (1985)
                                                                                                                                                                                                                         and its
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Chang, S. and Wu, H.C.
Nucleotide sequence of the Escherichia coli prolipoprotein signal
peptidase (1sp) gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Parsot,C., Cossart,P., Saint-Girons,I. and Cohen,G.N. Nucleotide sequence of thrC and of the transcription termination region of the threonine operon in Escherichia coli K12 Nucleic Acids Res. 11 (21), 7331-7345 (1983)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Bouvier, J., Richaud, C., Richaud, F., Patte, J.C. and Stragier, P. Nucleotide sequence and expression of the Escherichia coli dapB
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            coli
                                                                                                                                                                                                                       Nucleotide sequence of the gene for ribosomal protein S20
                                                                                                                                                                                                                                                                                                                                           Stoner, C.M. and Schleif, R.
Is the amino acid but not the nucleotide sequence of the Escherichia coli arac gene conserved?
Escherichia coli arac gene conserved?
J. Mol. Biol. 154 (4), 649-652 (1982)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Bouvier,J., Patte,J.C. and Stragier,P. Multiple regulatory signals in the control region of the Escherichia coli caraba operon Proc. Natl. Acad. Sci. U.S.A. 81 (13), 4139-4143 (1984)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Bardwell, J.C. and Craig, E.A.
Major heat shock gene of Drosophila and the Escherichia
heat-inducible dnaK gene are homologous
Proc. Natl. Acad. Sci. U.S.A. 81 (3), 848-852 (1984)
84144800
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        peptidase (1sp) gene
Proc. Natl. Acad. Sci. U.S.A. 81 (12), 3708-3712 (1984)
84222028
                                                                                                                    Sci. U.S.A. 78 (2), 752-756 (1981)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Gilson, E., Nikaido, H. and Hofnung, M. Sequence of the malk gene in E.coli K12 Nucleic Acids Res. 10 (22), 7449-7458 (1982) 6296778
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Chem. 259 (23), 14829-14834 (1984)
                                                                                                                                                                                                                                          flanking regions
J. Biol. Chem. 256 (15), 8177-8182 (1981)
                                                                                                                  Proc. Natl. Acad.
81199399
                                                                                                   Escherichia col.
                                                                                                                                                                                                    Mackie, G.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 J. Biol. (35054974
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  J. Biol.
85182715
2985604
                                                                                                                                                                                                                                                                                81264207
6267039
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               5316258
5259626
                                                                                                                                                              5262769
                                                                                                                                                                                                                                                                                                                                                                                                                                                 5283093
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          322174
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       374664
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  377309
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            094578
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    REFERENCE
AUTHORS
TITLE
                REFERENCE
AUTHORS
TITLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   MEDLINE
PUBMED
REFERENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     REFERENCE
AUTHORS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        AUTHORS
TITLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  JOURNAL
MEDLINE
PUBMED
                                                                                                                                                                                 REFERENCE
AUTHORS
                                                                                                                                                                                                                                                                                                                                                                                                                                               PUBMED
REFERENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               JOURNAL
MEDLINE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      JOURNAL
MEDLINE
                                                                                                                                                                                                                                                                                                     PUBMED
REFERENCE
                                                                                                                    JOURNAL
MEDLINE
                                                                                                                                                                                                                                                                                                                                              AUTHORS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   AUTHORS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     AUTHORS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              AUTHORS
                                                                                                                                                                                                                                                                                  MEDLINE
                                                                                                                                                                                                                                                                                                                                                                                                         JOURNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      JOURNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   JOURNAL
                                                                                                                                                                                                                                                               JOURNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                REFERENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                JOURNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            JOURNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       PUBMED
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   REFERENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               REFERENCE
                                                                                                                                                                                                                           TITLE
                                                                                                                                                                                                                                                                                                                                                                   TITLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            TITLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          TITLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      TITLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  TITLE
```

```
97326
                                                                                                                                                                                                               97386
                                                                                                                                                                                                                                              97446
                                                                                                                                                                                                                                                                           97447 AACATGGGTGACTATCAC-----CTGAATCATCAGGCGGAAACCTGGCTGCGG 97497
                                                                                                                                                                                                                                                                                                              97557
                                                                                                                                                                                                                                                                                                                                                                                                           97737
                                                                                                                                                                                                                                                                                                                                                                                                                                                                           97839
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      97677
                                                                                                                                                                                                                                                                                                                                                                                                                                            97791
                                                                                                                                                                196
                                  117
                                                                                                                                                                                                216
                                                                                                                                                                                                                                                                                              276
                                                                                                                                                                                                                                                                                                                              296
                                                                                                                                                                                                                                                                                                                                                             316
                                                                                                                                                                                                                                                                                                                                                                                         157
                                                                                                                                                                                                                                236
                                                                                                                                                                                                                                                               256
                                                                                                                                                                                                                                                                                                                                                                                                                         337 IleGluGlyLeuGlyAlaAspIleAspGlyLysLeuValLeuLeuAlaGlyGlyAspGly 356
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           392
                                                                                                         ValAlavalGlyGlyAsnLeuGlyThrProAlaLeuAspLeuLeuAlaAspAspIleGlu
                                                                                                                                                             ValAlaThrValLeuAsnValSerGluAspHisMetAspArgTyrAsp---GlyMetAla
                                                                                                                                                                                                                                                                                                                                                         GlyLeuSerLeuArgThrProAlaLeuValGlnAlaAlaAlaLysGlyValArgIleSer
                               GlyAspIleAspLeuPheAlaArgGluAlaLysAlaProlleValAlaIleThrGlySer
                                                               AsnAlaLysSerThrValThrTeuValGlyGluMetAlaValAlaAlaAspLysArg
                                                                       97267 GCAGCGACCATTCTGAACGTGACTGAAGATCATATGGATCGCTATCCGTTTGGTTTACAA
                                                                                                                                                                                             197 AspTyrHisLeuAlaLysHisArgIlePheArgGlyAlaArgGlnValValValAsnArg
                                                                                                                                                                                                     CAGTATCGTGCAGAAAACTGCGCATTTACGAAAACGCGAAAGTTTGCGTGGTTAATGCT
                                                                                                                                                                                                                                       AsnLysProAspPheLysAlaPheGlyLeuIleGluGluAspGlyGlnLysTrpLeuAla
                                                                                                                                                                                                                                                                                                    217 AlaAspAlaLeuThrArgProLeuIleAlaAspThrValProCysTrpSerPheGlyLeu
                                                                                                                                                                                                                                                                                           .257 PheGlnPheAspLysLeuLeuProValGlyGluLeuLysIleArgGlyAlaHisAsnTyr
                                                                                                                                                                                                                                                                                                                                                                                                                                 97792 AAATCGGCGGACTTT-----AGCCCACTGGCGCGTTACCTGAATGGCGATAAC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       -----ValValLeuLeuGlyArgAspAlaGlyLeuIleAlaGlnAlaLeuGlyAsnAla
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ValProLeuValArgValAlaThrLeuAspGluAlaValArgGlnAlaAlaGluLeuAla
                                                                                                                                                                                                                                                                                                                                                                                                                                                         LysGlyAlaAspPheHisAspLeuArgGluProValAlaArgPheCysArgAla----
                                                                                                                                                                                                                                                                                                                                         97558
                                                                118
                                                                                                                                                             178
                                                                               97087
                                                                                                                              158
                                                                                                                                                                                                                                                            237
                                                                                                                                                                                                                                                                                                                          277
 78
                                98
                                                97027
                                                                                               138
                                                                                                              97147
                                                                                                                                             97207
                                                                                                                                                                                                             97327
                                                                                                                                                                                                                                            97387
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        375
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       393
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      97897
                                                                                                                                                                                                                                                                                                                                                                                                                                         97738
                                                                                                                                                                                                                                                                                                                                                                                                                                                         357
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       413
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      97954
          g
                               ò
                                            셤
                                                                        용
                                                                                         ð
                                                                                                        8 % 8
                                                                                                                                                                                                                                                                        Q
                                                         ð
                                                                                                                                                         $ B $
                                                                                                                                                                                                       9
9
9
                                                                                                                                                                                                                                                       δ
                                                                                                                                                                                                                                                                                           9
P
                                                                                                                                                                                                                                                                                                                       g g
                                                                                                                                                                                                                                                                                                                                                     ð
                                                                                                                                                                                                                                                                                                                                                                        g
                                                                                                                                                                                                                                                                                                                                                                                         ŏ
                                                                                                                                                                                                                                                                                                                                                                                                       g
                                                                                                                                                                                                                                                                                                                                                                                                                        å
                                                                                                                                                                                                                                                                                                                                                                                                                                      a
                                                                                                                                                                                                                                                                                                                                                                                                                                                        ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                     q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ð
```

```
/proteil_ld="Calso" | "Proteil_ld="Calso" | 
                                                                                                                                                           08-AUG-2001
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          141
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 255
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             195
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 AlaAlaLysGlyValArgIleSerGlyAspIleAspLeuPheAlaArgGluAlaLysAla 109
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ProlleValAlalleThrGlySerAsnAlaLysSerThrValThrThrLeuValGlyGlu 129
                                                                                                                                                                                                                                                                                                                                           Enterobacteriales;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     87
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        20
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           69
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                89
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               28 GTCATTATCGGCCTGGGCCTCACCGGGCTTTCCTGCGTGGACTTTTTCCTCGCTGGGGT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  31 LeuProPheAlaValValAspThrArgGluAsnProProGluLeuAlaThrLeuArgAla
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        AlaArgGluLeuTyrValSerProGlyLeuSerLeuArgThrProAlaLeuValGlnAla
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     GEGCCCCCCCCCCTATGGATACCCTATGACACCCCCTGGATAAATTA-----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     GlnTyrProGln---ValGluValArgCysGlyGluLeuAspAlaGluPheLeuCysSer
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               11 IleValValGlyLeuGlyLySSerGlyMetSerLeuValArgTyrLeuAlaArgArgGly
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           801
                                                                                                                                                           PAT
                             ω̈.
     447
                                                                                                                                                           linear
                                                                                                                                                                                                                                                                                                                                                                                                                                            of
433 PheGluGluArgGlyArgLeuPheAlaLysAlaValGluGluLeu
                                                                                                                                                                                                                                                                                                                                                                                                            Forsyth, R.A., Ohlsen, K.L. and Zyskind, J.W. Genes identified as required for proliferation Patent: Wo Ol48209-A 259 05-JUL-2001; Elitra Pharmaceuticals, Inc. [US)
                                                                                                                                                                                                                                                                                                                                         Gammaproteobacteria;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    1317
227
58
137
21
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Length:
Matches:
Conservative:
Mismatches:
Indels:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             product"
                                                                                                                                                           DNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       coli"
                                                                                                                                                     AX189058 1317 bp | Sequence 259 from Patent WO0148209.
AX189058
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            1. .1317
/organism="Escherichia of
/mol_type="genomic DNA"
/db_xref="taxon:562"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Gaps:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          /note-"unnamed protein
                                                                                                                                                                                                                                                                           Escherichia coli
Escherichia coli
Bacteria; Proteobacteria; Gammal
Enterobacteriaceae; Escherichia
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               (1-1317)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             /transl_table=11
                                                                                                                                                                                                                                   AX189058.1 GI:15142764
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       /codon_start=1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  US-09-701-229-2 (1-448) x AX189058
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              6.35e-56
985.50
64.33%
51.24%
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Percent Similarity:
Best Local Similarity:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              294
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Alignment Scores:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        51
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             142
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           20
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              196
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 90
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    110
                                                                                                RESULT 14
AX189058
LOCUS
DEFINITION
ACCESSION
VERSION
KEYWORDS
SOURCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Query Match:
DB:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  source
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              BASE COUNT
ORIGIN
                                                                                                                                                                                                                                                                                                              ORGANISM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Pred. No.:
                                                                                                                                                                                                                                                                                                                                                                                    REFERENCE
AUTHORS
TITLE
JOURNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    PEATURES
                                                g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ŏ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                QQ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           á
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 à
```

		RESULT 1
	445 GluGluLeu 447	QY dd
CDS	1243 GCCAGCCTTGATCAATTCAAGAACTTTGAACAAGGGGCAATGAGTTTGCCCGTCTGGCG 1302	qq
eueb	425 AlaSerLeuAspMetPheLysAsnPheGluGluArgGlyArgLeuPheAlaLysAlaVal 444	Qy
	:::	qq
	405 ValArgGlnAlaAlaGluLeuAlaArgGluGlyAspAlaValLeuLeuSerProAlaCys 424	οy
		qq
	385 IleAlaGlnAlaLeuGlyAsnAlaValProLeuValArgValAlaThrLeuAspGluAla 404	δλ
		qq
	CysArgAlaValValLeuLeu	Qy
	1021 CATTIGITGCTGGGTGGCGATGGTAAATCGGCGGACTTTAGCCCACTG 1068	QΩ
	349 ValLeuLeuAlaGlyGlyAspGlyLysGlyAlaAspPheHisAspLeuArgGluProVal 368	Qy
		qq
SOO	329 AsnValGlyAlaAlaLeuAlaAlaIleGluGlyLeuGlyAlaAspIleAspGlyLySLeu 348	Qy
	:::	qq
dene	309 ArqCysGlnTrpValArqGluArqGlnGlyValSerTyrTyrAspAspSerLysAlaThr 328	ογ
	209 VAIGLYPURDARSPAIRMELLENGLIYAALERULYSAILERTRESETTIYLENGLIRIIS 308	දි සි
		ф
FEATURES	269 LysIleArgGlyAlaHisAsnTyrSerAsnAlaLeuAlaAlaLeuAlaLeuGlyHisAla 288	Οy
TITLE JOURNAL	:::     :::	QQ
	249 GluAspGlyGlnLysTrpLeuAlaPheGlnPheAspLysLeuLeuProValGlyGluLeu 268	Qy
		QQ
AUTHORS	229 ValProCysTrpSerPheGlyLeuAsnLysProAspPheLysAlaPheGlyLeuIleGlu 248	δλ
PUBMED REFERENCE	:::	<b>Q</b>
JOURNAL	209 AlaArgGlnValValValAsnArgAlaAspAlaLeuThrArgProLeuIleAlaAspThr 228	Qy
TITLE		7 8
	100 Acceletecholitakangungangangangangangungungungungungungungungungungungungun	8 8
AUTHORS	ThrCysAspArgLeuAsnAlaGluValAlaThrValLeuAsnValSerGluAspHisMet 1	λο δ
	436 AIGCTACTGGATGATGAGTGTGGAACTGTGCTGGAACTGTCGAGCTTCCAGCTGGAA 495	ପ୍ପ
SOURCE	150 AspLeuLeuAlaAspAspIleCluLeuTyrValLeuGluLeuSerSerPheGlnLeuGlu 169	Qy
ACCESSION VERSION KEYWORDS	150 MECLARVALALARIAASPLYSATEVOATAAVALLYGIYASTREGGITTITETOATALALALU 149 	Š 8
DEFINITION	6 CCGATTGTGGCGATTACCGGTTCTAACGGCAAAAGCACGGTCACCACGCTAGTGGGTGAA 37	<b>Q</b> O
, our		

```
Bacteria; Proteobacteria; Gammaproteobacteria; Enterobacteriales; Bacteria; Proteobacteria; Gammaproteobacteria; Enterobacteriales; Enterobacteriacea; Escherichia.

I (bases I to 12791)

Perna N.T., Plunkett, G. III, Burland, V., Mau, B., Glasner, J.D., Rose, D.J., Mayhew, G.F., Evans, P.S., Gregor, J., Kirkpatrick, H.A., Fostbeck, E.J., Markett, J., Klink, S., Boutlan, A. Shao, Y., Miler, L., Grotheck, E.J., Anantharaman, T.S., Lin, J., Yen, G., Schwartz, D.C., Welch, R.A. and Blatiner, F.R.,

I and Blatiner, F.R.,

Genome sequence of enterobaemorrhagic Escherichia coli 0157:H7

IN Nature 409 (6819), 529-533 (2001)

I 1206551

E 2 (bases 1 to 12791)

Perna N.T., Plunkett, G. III, Burland, V., Mau, B., Glasner, J.D., Rose, D.J., Mayhew, G.F., Evans, P.S., Gregor, J., Kirkpatrick, H.A., Posfal, G., Hackett, J., Kilnk, S., Boutin, A., Shao, Y., Miller, L., Grotheck, E.J., Davis, N.W., Lim, A., Dimalanta, E., Potamousis, K., Welch, R.A., and Blattner, F.R.,

Direct Submission
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     /protein_id="Aag54384.1"
//bb_xref="G1:12512783"
//db_xref="G1:12512783"
//db_xref="G1:12512783"
//db_xref="G1:12512783"
//db_xref="G1:12512783"
//db_xref="G1:12512783"
//db_xref="G1:12512783"
//db_xref="G1:12512783"
//db_yref="G1:1251278"
//db_yref="G
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               /function="orf; Unknown function" 7. Anote="Residues 1 to 152 of 152 are 99.34 pct identical to residues 1 to 152 of 152 from Escherichia coli K-12 Strain MG1655: B0081
AE005185 12791 bp DNA linear BCT 21-MAR-2001
Escherichia coli 0157:H7 EDL933 genome, contig 1 of 3, section 9 of
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       /note="Recidues 1 to 334 of 334 are 100.00 pct identical to residues 1 to 334 of 334 from Escherichia coli K-12 Strain MG1655: B0080"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              /product="transcriptional repressor of fru operon and others"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Submitted (22-OCT-2000) Laboratory of Genetics, University of Wisconsin, 445 Henry Mall, Madison, WI 53706, USA Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          /function="regulator; Energy metabolism, carbon: Glycolysis"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1. .12791
/organism="Escherichia coli 0157:H7 EDL933"
/mol_type="genomic DNA"
/strain="EDL933"
/serotype="0157:H7"
/db_xref="taxon:155864"
/note="enterohemorrhagic"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      1678. .2136
/gene="yabB"
/note="synonym: 20091"
1678. .2136
/gene="yabB"
                                                                                                                                                                                                                                                                                                                          Escherichia coli 0157:H7 EDL933
Escherichia coli 0157:H7 EDL933
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     /gene="fruR"
/note="synonym: 20090"
72. .1076
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      /transl_table=11
                                                                                                                                                          AE005185 AE005174
AE005185.1 GI:12512782
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   /codon_start=1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    /codon_start=1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            /gene="fruR"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          See
                                                         ×
                                                                                                                                                                                                                                                                                                                                                                                    Σ
```

/transl\_table=11

gene

CDS

```
/note="Residues 1 to 452 of 452 are 99.33 pct identical to residues 1 to 452 of 452 from Escherichia coli K-12 Strain MG1655: B0086"
                                                                                                        to 495 of 495 are 98.98 pct identical to of 495 from Escherichia coli K-12 Strain
                                                                                                                                                                                                              SAVDVOHELAGLVDODATFCAMËVSSHGLVOHRVAALKFAASVFTNLSRDHLDYHGDM
PHE BAKMILLYSEHHGGOATIRADDEVGRRMIAKLPDAVAVSHEDHINDCHGRWLKA
TEVRYHDSGATIRESSWGDGE IESHLMGAFRVSNLLLALATLATLACYPLADLIKTAA
RLQPVCGRMEVFTAPGKPTVVVDYAHTPDALEKALQAARLHCAGKLWCVFGCGGDRDK
GKRPLMGAIAEEFADVAVYTDDNPRTEEPRAIINDILAGMLDAGHAKVWEDRAEAVTC
6944. 8052
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    /transl_table=11
/product-"D-alanine:D-alanine-adding enzyme"
/protein_id-"AAG54390.1"
/db_xref="GI:12512790.1"
/translation="MISVTLSQLTDIINGELQGADITLDAVTTDTRKLTPGCLEVALK
GERFDAHDFADQAKAGGAGALLVSRPLDIDLPQLIVKDTRLAFGELAAWVRQOVPARV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        VALTGSSGKTSVKERTAALLSQCGNTLYTAGNLNNDIGVPMTLLRLTPEYDYAVTELG
ANHQGEIVWTVSLTRPEAALVNNLAAAHLEGFGSLAGVAKAKGEIFSGLPENGIAIMN
ADNNDWLNWQSVIGSRKVWRFSPNAANSDFTATNIHVTSHGTEFTLQTPTGSVDVLLP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   LPCRHNIANALAAAALSMSVGATLDAIKAGLANLKAVPGRLFPIQLAENQLLLDDSYN
ANVGSMTAAVQVLAEMPGYRVLVVGDMAELGAESEACHVQVGEAAKAAGIDRVLSVGK
QSHAISTASGVGEHFAEKTALITRLKSLIAEQQVITILVKGSRSAAMEEVVRALQENG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     to 360 of 360 are 99.72 pct identical to of 360 from Escherichia coli K-12 Strain
                                                                                                                                                                                                                                                                                                                                                                       HEPSDNLXXVGVTGTNGKTTTTQLLAQWSQLLGETSAVMGTVGNGLLGKVIPTENTTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          SerLeulleAlaSerAspHisPheArg-----IleValValGlyLeuGlyLysSer 18
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                38
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  19 GlyMetSerLeuValArgTyrLeuAlaArgArgGlyLeuProPheAlaValValAspThr
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 /gene="murF"
/function="enzyme; Cell envelop: Murein sacculus,
peptidoglycan"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    /note="groonym: 20097"
8046. .9128
/gene="mray"
/function="enzyme; Cell envelop: Murein sacculus,
                                                     /function="enzyme; Cell envelop: Murein sacculus, peptidoglycan"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           12791
230
61
140
24
10
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Length:
Matches:
Conservative:
Mismatches:
Indels:
Gaps:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            US-09-701-229-2 (1-448) x AE005185 (1-12791)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      /note="synonym: 20096"
6694, .8052
                                                                                                     /note="Residues 1 residues 1 to 495 MG1655: B0085"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     /note="Residues 1
residues 1 to 360
                                                                                                                                                                                      /codon_start=1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  /codon_start=1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             peptidoglycan
                                /gene="murE"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              /gene="murF"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    /gene="mraY"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           1.24e-54
984.00
63.96%
50.55%
43.54%
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            .9128
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Percent Similarity:
Best Local Similarity:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Alignment Scores:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Query Match:
DB:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Pred. No.:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               gene
        CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   /traislation="MMENYKHTTVLLDEAVNGLNIRPDGIYIDGTFGRGGHSRLILSO
LGEEGRLLAIDRDPQAIAVAKTIDDPRFSIIHGPFSALGEYVAERDLIGKIDGILLDL
GVSSPQLDDBRGFSFMRDGPLDMRDPTRGQSAAEMLQTAERADIAWVLKTYGEERF
AKRIARAIVERNREOPWTRTKLAEVNAATPVKDKFKHPATRTFQAVRIWVNSELEE
IRQALKSSLWYLARGCRLSIISFHSLEDRIVKRFWRRNSRGFQVPAGLPWTEEDLKKK
GGRQLRALGKLMPGEEEVAENPRARSSVLRIAERTNA"
                                                                             /translation="WFRGATLVNLDSKGRLSVPTRYREQLLENAAGGMYCTIDIHHPC
LLLYPLPEWEIIEQKLSRLSSMNPVERRVQRLLLGHASECQMDGAGRLLIAPVLRQHA
GLTKEVMLVGQFNKFELWDETTWHQQVKEDIDAEQLATGDLSERLQDLSL"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              /translation="MISRYTEALSKYKGSMGSHERHALPGYIGDDLLRFGKLPLCLFI
CIILTAVTVVTTAHHTRLLTAQREQLVLERDALDIEWRNLILEENALGDHSRVERIAT
EKLQMQHVDPSQENIVVQK"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          RINGHEIKDVARYSELTLIGVLQKSSNVGVSKLALAMPSSALVDTYSRFGLGKATNLG
LVGERGGLYPPPOKORMSDIERATFSFGYGLMVTPLQLARVTAITGSYGITRPLSITKVD
PVDFERRYPPESIVRTVVHAMENAVALFGGGGVYAAIKGYRIAIKTGTAKKVGDGRYI
NKYIATAGVAPASQPRFALVVVINDPQAGKYYGGAYASPVFGAIMGGVLRTMIEPD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              /traislation="MKAAAKTOKPKROEEHANFISWRFALLCGCILLALAFLLGRVAW
LQVISPDMLVKEGDMRSLRVQQVSTSRGMITDRSGRPLAVSVPVKAIWADPKEVHDAG
GISVGDRWKALANALNIPLDQLSARINANPKGRFIYLARQVNPDMADYIKKLKLPGIH
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              LREESRRYYPSGEVTAHLIGFTNVDSQGIEGVEKSFDKWLTGOPGERIVRKDRYGRYI
EDISSTDSQAAHNLALSIDERLQALVYRELNNAVAFNKAESGSAVLVDVNTGEVLAMA
NSPSYNPNNLSGTPKEAMRNRTITDVFEPGSTVKPMVVWTALQRGVYRENSVLNTIPY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             /product-"septum formation; penicillin-binding protein 3; peptidoglycan synthetase" /protein_id="AnG54388.1" /db_xref="G1:12512787"
                                                                                                                                                                                                                                                                                       /function="orf; Not classified"
/note="Residues 1 to 313.0f 313 are 100.00 pct identical to residues 1 to 313 of 313 from Escherichia coli K-12 Strain MG1655; B0082"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          /function="phenotype; Cell division"
//note="Residues 1 to 121 of 121 are 100.00 pct identical
to residues 1 to 121 of 121 from Escherichia coll K-12
Strain MG1655: B0083"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 3457. 5223
/gene="fts1"
/function="enzyme; Cell division"
/note="Residues 1 to 588 of 588 are 100.00 pct identical
to residues 1 to 588 of 588 from Escherichia coll K-12
Strain MG1655: B0084"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                /codon_start=1
/transl_table=11
/product="cell division protein; ingrowth of wall
/product-"orf, hypothetical protein"
/protein_id-"AAG54385.1"
/db_xref-"GI:12512784"
                                                                                                                                                                                                                                                                                                                                                                                                                                             /product-"putative apolipoprotein"
/protein_id-"AAG54386.1"
/db_xref-"G1:12512785"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                /protein_id="AAG54387.1"
/db_xref="G1:12512786"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ALTTGDKNEFVINGGEGTGGRS"
5210. .6697
/gene="murE"
/note="synonym: 20095"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      /note="synonym: 20093"
3076. .3441
/gene="ftsL"
                                                                                                                                                                                                      /note="synonym: 20092"
2138. .3079
/gene="yabc"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 /note-"synonym: 20094"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        /transl_table-11
                                                                                                                                                                                                                                                                                                                                                                                                                       /transl_table=11
                                                                                                                                                                                                                                                                                                                                                                                               /codon_start=1
                                                                                                                                                           2138. .3079
/gene="yabC"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              3457. .5223
/gene="ftsI"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 3076. .3441
/gene="ftsL"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             septum
```

gene

CDS

gene

CDS

gene

G G G G G G G G G G G G G G G G G G G	Ar.		sGlyGluLeuAspAlaGluPheLeuCysSerAlaArgGluLeuTyrValSerPro 77	CAGTCCC 9	Ser 97	GCATCCATCCTTAAGCGCTGCCGCTGATGCCGGAATCGAAATCGTT 9409	AsplieAspLeuPheAlaArgGluAlaLysAlaProlleValAlalieThrGlySer 117	GTTCTGTCGCGAAGCACAAGCACCGATTGTGGGGGATTACCGGTTCT 9469	AlaLysSerThrValThrThrLeuValGlyGluMetAlaValAlaAalaAspLysArg 137	GGTCACCACGCTAGTGGGTGAATGGCGAAAGCGCGGGGGTTAAC 9529	laValGlyGlyAsnLeuGlyThrProAlaLeuAspLeuAlaAspAspIleGlu 157	6	uTyrValLeuGluLeuSerSerPheGlnLeuGluThrCysAspArgLeuAsnAlaGlu 177	ACTGTCGAGCTTCCAGCTGGAAACCACCTCCAGCTTACAGGCGGTA 9649	uAsnValSerGluAspHisMetAspArgTyrAspGlyMetAla 196	::         ::	aLysHisArgIlePheArgGlyAlaArgGlnValValValAsnArg 216		aAspAlaLeuThrArgProLeuIleAlaAspThrValProCysTrpSerPheGlyLeu 236		eLysAlaPheGlyLeulleGluGluAspGlyGlnLysTrpLeuAla 256	TCACCTGAATCATCAGGGGGAAACCTGGCTGCGG 9880	PheGlnPheAspLysLeuLeuProValGlyGluLeuLysIleArgGlyAlaHisAsnTyr 276	AGTGCTGAACGTGAAAGAAATGAAACTTTCCGGGCAGCATAACTAC 9940	SerAsnAlaLeuAlaAlaLeuAlaLeuGlyHisAlaValGlyLeuProPheAspAlaMet 296	GGCGCTGGCTGGCAGATGCCGCAGGTTACCGCGTGCCAGCAGC 10000	LeuGlyAlaLeuLysAlaPheSerGlyLeuAlaHisArgCysGlnTrpValArgGluArg 316	CACATTCACTGGTCTGCCGCATCGCTTTGAAGTTGTGCTGGAGCAT 10060	rTyrAspAspSerLysAlaThrAsnValGlyAlaAlaLeuAlaAla 336	CGGCGTACGTTGGATTAACGATTCGAAAGCGACCAACGTGGGGGGGG	spileAspGlyLysLeuValLeuLeuAlaGlyGlyAspGl	ACGTAGACGCCACGCTGCATTTGTTGCTGGGCGCGCGATGGT 1	eHisAspLeuArgGluProValAlaArgPheCysArgAla 374	TAGCCCACTGGCGCGTTACCTGAATGGCGATAAC 10222	uLeuGlyArgAspAlaGlyLeuIleAlaGlnAlaLeuGlyAsnAla 392	- GGCGTGCAGCTGGCGGCGT
$\begin{smallmatrix} & & & & & & & & & & & & & & & & & & &$	ArgGluAsnProProGluLeuAlaThrLeuArgAl	CGTAT	ArgCy	CACAC		GGT	G1y	099	Asn	AAC.	ValA	GTTG	- E	O CTGTACGTACTGGAACTGTCGAGCTTCCAGCTGGA				0 CAATACCGIGCGGCAAAATIGCGIAITIACGAAAA	Al	0 GATGATGCCTTAACAATGCCGATTCGCGGTGCGGA	AsnLysProAspPheLysAl	0 AACATGGGTGACTATCACCTGAATCA							5	₹	IleGluGlyLeuGlyAl	CTGAATGGCCTG	LysGlyAlaAspPheHisAs	AAATCGGCGGACTTT	ValValLeuLeuGlyArgAspAl	3 GTACGTCTGTATTGTTTCGGTCGACGGCGTC
	δý	d D	δy	ф	δλ	g	δγ	q	δ	qq	Qγ	qq	δλ	qq	ογ	qq	δy	qq	δ	qq	δ	qq	δ	qq	δ	g	δλ	qq	δλ	QQ	δλ	qq	ογ	q	δλ	qq

Search completed: August 14, 2003, 08:41:41 Job time: 4825 secs

THIS PAGE BLANK (USPTO)

•

```
GenCore version 5.1.6
Copyright (c) 1993 - 2003 Compugen Ltd.
```

OM nucleic - nuc	OM nucleic - nucleic search, using sw model
Run on:	August 14, 2003, 03:24:05; Search time 5305 Seconds (without alignments) 11181.708 Million cell updates/sec
Title: Perfect score: Sequence:	US-09-701-229-1 1450 1 cgtgctgatcggcctcgccatgttgagccggcacggca
Scoring table:	OLIGO_NUC Gapop 60.0 , Gapext 60.0
Searched:	2888711 seqs, 20454813386 residues
Word size :	. 0
Total number of	Total number of hits satisfying chosen parameters: 5777422
Minimum DB seq   Maximum DB seq	Minimum DB seq length: 0 Maximum DB seq length: 2000000000
Post-processing	Post-processing: Listing first 45 summaries
Database :	GenEmbl:* 1: gb_ba:*

GenEmbl:\*

1 9b\_ba:\*

2 9b\_htg:\*

4 9b\_on:\*

4 9b\_on:\*

5 9b\_on:\*

6 9b\_pb:\*

8 9b\_pb:\*

10 9b\_pt:\*

11 9b\_pt:\*

12 9b\_pt:\*

13 9b\_pt:\*

14 9b\_pt:\*

15 en\_ba:\*

16 en\_fun:\*

17 en\_hum:\*

18 en\_hum:\*

19 en\_mu:\*

20 en\_ov:\*

21 en\_ov:\*

22 en\_bt:\*

23 en\_pt:\*

24 en\_pt:\*

25 en\_pt:\*

26 en\_to:\*

27 en\_pt:\*

28 en\_htg\_hum:\*

31 en\_htg\_hum:\*

32 en\_htg\_hum:\*

33 en\_htg\_pin:\*

34 en\_htg\_ran:\*

35 en\_htg\_ran:\*

36 en\_htg\_ran:\*

37 en\_htg\_pin:\*

38 en\_htg\_ran:\*

39 en\_htg\_ran:\*

30 en\_htg\_ran:\*

31 en\_htg\_ran:\*

32 en\_htg\_ran:\*

33 en\_htg\_ran:\*

34 en\_htg\_ran:\*

36 en\_htg\_ran:\*

37 en\_htg\_ran:\*

38 en\_htg\_ran:\*

39 en\_htg\_ran:\*

36 en\_htg\_ran:\*

37 en\_htg\_ran:\*

38 en\_htg\_ran:\*

38 en\_htg\_ran:\*

39 en\_htg\_ran:\*

Pred. No. is the number of results predicted by chance to have a

em\_htgo\_hum:\* em\_htgo\_mus:\* em\_htgo\_other:\*

score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

Description	Ps	8	AEU16//9 PSeudomon	cherich	X51584 Escherichia	AE015046 Shigella	AE000118 Escherich	AX191720 Sequence	. coli 2	cherich	ACO75957 Mus muscu	AP002550 Escherich	AE016978 Shigella	AE010/33 ESCHELLCH AP002997 Mesorhizo	AJ328412 Homo sapi	AB004563 Terrabact	Continuation (3 of	GEO1887 FSCUCOMON U33883 Bradyrhizob	AL646063 Raîstonia	AP005939 Bradyrhiz	ABU32/99 Chromobac AF172851 Chromobac	Y19106 Pseudomonas	U72354 Pseudomonas	U82965 Streptomcye	AP003926 Oryza sat	AP004617 Oryza sat	AC122310 Mus muscu	ALYSYLLS SLIEPTOMY		AF049243 Mesorhizo	M338LD S.marcescen	<b>γ</b> ×		2280	AE008249 Agrobacte AF031417 Pseudomon			- Teon	417 of				1 Gammaproteobacteria; Pseudomonadales;		, Mizoguchi,S.D., Warrener,P.,	., mondatanom
SUMMARIES		AY008276	- 11	١.	ECMUROY	AE015046	AE000118		5 EC2MIN	EC0110K	AC073937	AP002550	AE016978	AE016/33 AP002997	HSA328412		AC141230_2	BJU33883	AL646063	AP005939	AB032/99 AF172851	PPY19106	U72354	STU82965	AP003926	AP004617	0 AC122310	AX196006	HSSKIR	MELOSYMI2	SMASFUABC				AE008249 AF031417		ALIGNMENTS	2	a PAO1, section		633		엹	ошорі	Pham, X. O.T., Erwin, A.L., Mizo Rrinkman F.S. I. Hufnadle W.O.	
$_{ m Y}^{ m \it Y}$ h Length DB	24000	5280		1629	2608	11441		28277 6	28277 1	111408	259498	281530		329709	713	8599	110000		207050	300900	10094	11985	13376		132469	152460 8	186217 1		3511	3772		10029		10801	4 12036 1 4 12296 1				nas aeruginos	AE00409	.1 GI:99506:		aerugi roteoba	aceae; to 240	٠.	
% Query Score Match	449	248 86.	'n	i	H,	.i.		i	4	-i -	-i	ij	<u>-</u> i -		i	.i.	-i -	i	Η.	≓,		i	٠.,	-i -		Η.	.i.	i -	; <del>,</del>	i,	-i -		20 1.	٠.	20 1	: :		3500048	Pseudomonas	genome. AE004856	AE004856	Pseudomonas	Pseudomonas Bacteria; P	Pseudomonad	tover, C	- I Found
sult No.	c 1 1		v) ≠	· ro	9	۲ ۵	o o	10	11	12	14		16	c 18			c 21		c 24		276	28	29	30 31	3.5	c 33	ω c		c 37			4.1		c 43	C 44			AE004856/C	DEFINITION	ACCESSION	VERSION	SOURCE	ORGANISM	REFERENCE	AUTHORS	

```
/ db_xref===G1:995.073.*.
/ db_xref==G1:995.063.*.
/ translation==MFAPLIKKLFGSKNERDVKRMAKAVQAINALEDGMYALSDEOLK
AKTAEGRORYAKGETLDOLLPEAFAVYREAGKRVWGMRHFDVOLLIGGMTLHDGKIAEM
AKTAEGRORYAKGETLDOLLPEAFAVYREAGKRVWGMRHFDVOLLIGGMTLHDGKIAEM
RTGEGKTLVGTLEYYLNALGSKGVHVYTNOYLARDANWMRPLYEFLGLSVGVYTPF
RTGEKTLVGTLEYGTENDLSKLIPLAKOVEEVERFTEGHYS IDEKTROYELLE
GRAFPLISGOABSDSELYIKIKLKLIPRLKROYEEVERFTEGHYS IDEKTROYELLE
OGHOFIEDLLSONGLLGGEGESLYSAHNLSLLTHVYAALRAHTLFHRRVEYIVOGDOLL
LIDEHTGRTWAGGRILSGGLHOAIEAKEGLPIOAESOTLASTTFONYFRLYNKLAGWTG
TADTEAGRESPERROITGALGYVYLFPHYRPTARRYBYNLVYTYTOGEKYANATITOTROVGLNG
PILVGTASIESSEYVSKLLCAAGAGGESLYANNAGGRGGGAGGR
RGTDILLGGNWEVEVAALENPTEGOIAQIKAEWQKRHOQVIEAGGGGGETIRFNYT
NAIEKRAGNGYGDFGSSRRYLSLEDNLWARTFASDRYKNFWALGWGGSGETIRFREE
TLSAYINOHIPPQSLEGALAAFEDDVANEGRKYITHNYTLLSAEDVGETIRFFEE
TLSAYINOHIPPQSLEGAALSAFEKONLLSTWOHLESTWOHN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          /translation-"MHITELSRHHGAARSVHLQPRLLMLAGACVVGASLLAGGFWGAW
LFRAPAPVAGIEVDAALQAQSAEISSAREDAQROWDALSVHLGELQARLVRLDALGER
LETADAVDPDEFDFSLSVGQGGVDEPLEGSAYAPPSFWATLDELAARLDTREQQLEVL
EQLLADKHISQSTYLAAQQVYQGYISSPFGRRVNPVSGRLSHHKGIDFAAPAGSDVVA
VAAGVVTWSGRKNGYGNVVEVGHADGYTLYAHNQKNLVEVGDLVKRGQVLAKVGSTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     /translation="MLFAEAQRICRLQQLLESQLQPAARPYCHVASWRGGCLLLIVTD
GHWATRLRYQQRRLQRQLQAFEEFANLAKILFKVQPTTSTQRAARRSLTLSAVAAENL
RESAEIVGNPRLREALERLASRAEKSRQE"
                                  SRQFVHDGVTVTVTGISKGAGMIKPNMATMLGYIATDAKVAQGVLQDLLRDAANKSFN
TTIOEDTSTNDCCMLIATGRAALPEYVQASGALFAALKQAVLESVBAGE
RATKEVTVQVNGGATHQECLDYGXAVAHSPLIKTALFASDPWGRILAAVGRGVANL
DVSKIDVFLGDVCIASRGGRAASYTEEDGAAVWAQAEIGIRIELGRGTCSETIWTTDL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      PÄQEYKRESFTLFQELLDSIKRDTIRVLSHVQVRREDPAEEBARLRRBAEELAKRÄQF
QHAEAPSMEQAVAGEEEELPEGPAPVVPLEPVRNEQKIGRNEPCPCGSGKKYKHCHGQ
   agvaetsvlpystgvigeplpvakieaalpaaladlaedrwaeaaagimttdtlpkga
                                                                                                                                                                                                                                                                                                                                                                                                        /locus_tag-"PA4403"
/note-"Protein name confidence: Class 2 (high similarity
to functionally studied protein)"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 of
no
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        of
o
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    complement(4339. 5262)
/locus_tag="PA4404"
/locus_tag="PA4404"
/note="Protein name confidence: Class 4 (homologs previously reported genes of unknown function, or similarity to any previously reported sequences)"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              5409. 5804
/locus_tag="PA4405"
5409. 5804
/note="Protein name confidence: Class 4 (homologs previously reported genes of unknown function, or similarity to any previously reported sequences)"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              /product="secretion protein SecA"
/protein_id="AAG07791.1"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  /product="hypothetical protein"
/protein_id="AAG07792.1"
/db_xref="GI:9950636"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       RSTGYHVHFEVMKDGRVMNPQSFIARASVSE'
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         /product="hypothetical protein"
/protein_id="AAG07793.1"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          /locus_tag="PA4406"
/note="synonyms: envA, asmB"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      .5262)
                                                                                                                                                                                                                                                                                                                                   complement(1455. .4205)
                                                                                                                                                                                                                       complement(1455. .4205)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     complement(5865. .6776)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      /db_xref="GI:9950637"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      complement(4339. .5.
/locus_tag="PA4404"
                                                                                                                                                                                                                                                                                                /locus_tag-"PA4403"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             /codon_start=1
/transl_table=11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               /transl_table=11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                /codon_start=1
/transl_table=11
                                                                                                                                                                                        SHEYVKINAEYRT"
                                                                                                                                                                                                                                                                                                                                                                          /gene="secA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             gene
                                                                                                                                                                                                                               gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         gene
                                                                                                                                                                                                                                                                                                                                           CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                accuracy of the protein name.

Class 1: Function experimentally demonstrated in P. aeruginosa.

Class 2: Function of highly similar gene experimentally
demonstrated in another organism (and gene context consistent
in terms of pathways its involved in, if known).

Class 3: Function proposed based on presence of conserved amino
acid motif, structural feature or limited sequence similarity
to an experimentally studied gene.

Class 4: Homologs of previously reported genes of unknown function,
or no similarity to any previously reported sequences.
                              Westbrock-Wadman, S., Yuan, Y., Brody, L.L., Coulter, S.N., Cooler, R., Kas, A., Larbig, K., Lim, R.M., Smith, K.A., Spencer, D.H., Wong, G.K.-S., Wu, Z. and Paulsen J.T. Complete genome sequence of Pseudomonas aeruginosa PA01, an
                                                                                                                                                                                                                                                                                                                    Stover, C.K., Pham, X.-Q.T., Erwin, A.L., Mizoguchi, S.D., Warrener, P., Stover, C.K., Pham, X.-Q.T., Erwin, A.L., Mizoguchi, S.D., Warrener, P., Hickey, M.J., Brinkman, F.S.L., Hufnagle, W.O., Kowalik, D.J., Lagrou, M., Garber, R.L., Goltry, L., Tolentino, E., Westbrock-Wadman, S., Yuan, Y., Brody, L.L., Coulter, S.N., Folger, K.R., Kas, A., Larbig, K., Lim, R.M., Smith, K.A., Spencer, D.H., Wong, G.K.-S., Wu, Z., Paulsen, I.T., Reizer, J., Saier, M.H., Direct Submission
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   /translation="MAVGLGPLSTLHPVPGFELGIASAGIKRPGRKDVVVMRCAEGSS VAGVFTLNAFCAAPVTLAKQRFLGEVRYLLINTGNANAGTGEAGLAAAAQTCAKLAEL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         This represents the February 3, 2003 version of the continually updated, reviewed, Pseudomonas aeruginosa PAOI genome annotation, from PseudoCAP (see http://www.pseudomonas.com for latest updates and links to alternate annotations). PseudoCAP is coordinated by Fiona S.L. Brinkman (Simon Fraser University, Canada) and Robert E.W. Hancock (University of British Columbia, Canada). We welcome submission through www.pseudomonas.com of any proposed changes.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  /locus_tag="PA4402"
/note="Protein name confidence: Class 2 (high similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Submitted (16-MAY-2000) Department of Medicine and Genetics, University of Washington Genome Center, University of Washington, Box 352145, Seattle, WA 98195, USA 3 (bases 1 to 24000)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Protein name confidence' is used to rate our confidence of the
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Pseudomonas aeruginosa Community Annotation Project (PseudoCAP)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           to functionally studied protein; Subcellular localization: Cytoplasmic; Subcellular localization confidence: Class 2; Alt protein name: ornithine transacerylase."
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Direct Submission Submission Submitted (04-FEB-2003) Department of Molecular Biology and Blochemistry, Simon Fraser University, 8888 University Dr., Burnaby, British Columbia V5A 156, Canada
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           /product="glutamate N-acetyltransferase"
/protein_id="AAG07790.1"
/db_xref="GI:9950634"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    1. .24000
/organism="Pseudomonas aeruginosa PAO1"
/mol_type="genomic DNA"
/strain="PAO1"
Lagrou, M., Garber, R.L., Goltry, L., Tolentino, E.
                                                                                                                                                                             opportunistic pathogen
Nature 406 (6799), 959-964 (2000)
20437337
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              /db_xref="taxon:208964"
complement(91. .1308)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     complement(91. .1308)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           /gene="argJ"
/locus_tag="PA4402"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        /transl_table=11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       /gene="argJ"
                                                                                                                                                                                                                                                                                             10984043
```

gene

FEATURES

CDS

REFERENCE AUTHORS CONSRIM TITLE JOURNAL

COMMENT

TITLE JOURNAL

MEDLINE PUBMED REFERENCE AUTHORS

JOURNAL

TITLE

```
AVIELGASRIGEINATVELIFRENALITINAGRAHVERGENGERET VERGEELEGELADOGTAVUNDDKAPTAVELTERPHYALITINAGRAHVERGERGERET VERGEELEGELADOGTAVUNDDKAFDTWERARSGRPLIFFSLDREPADERAADLORDARGCMGFRLGOVAGERADOGTAVUNLIGRHNVANALAAAAAAHALGVPLDGIVAGLQALQPVKGRAVAQLIASGLRVIDDBSYNARPSMLAAIDLIGSFSGRTVLVLGDMGELGSWAEQAHREVGAYAAGKVSALGCSSEESH
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            /protein_id="AAG22121.1"
/db_xref="G1:10719754"
/db_xref="G1:1071975
   /translation-"MLEPLRLSQLTVALDARLIGEDAVFSAVSTDSRAIGPGQLFIAL
SGPRFDGHDYLAEVAAKGAVAALVEREVADAPLPQLLVRDTRAALGRLGALNRRKFTG
PLAAMTGSSGKTAVKEMLASILRTQAGDAESVLATRGNLNNDLGVPLTLLQLAPQHRS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              /protein_id="Aac45237.1"
/db_xref="G1:12007718"
/tb_xref="G1:12007718"
/translation="MSLIASDHFRIVVGLGKSGMSLVRYLARRGLPFAVVDTRENPPE
/tatlsAQYPQVEARGCELDAEFLCSARELYYSPGLSLRTPALVQAARGVRISGDIDL
FAREAKAPIVAITGSNAKSTVTTLVGEMAVAADKRVAVGGNLGTPALDLLADDIELYV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 LELSSFQLETCDRLNAEVATVLNVSEDHMDRYDGMADYHLAKHRIFRGARQVVVNRAD
ALTRPLIADTVPCWSFGLNKPDFKAFGLIEEDGQKWLAFQFGKLLPVGELKIRGAHNY
SNALAALALGHAVGLPFDAMLGALKAFSGLAHRCQHVRERQGVSYYDDSKATNVGAAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          AAIEGLGADIDGKLVLLAGGDGKGADFHDLREPVARFCRAVVLLGRDAGLIAQALGNA
VPLVRVATLDEAVRQAAELAREGDAVLLSPACASLDMFKNFEERGRLFAKAVEELA"
1781 c 1759 g 923 t
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  4059
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       3940 cecerceacenerrecearcerreresecerceseangagesegarerecerserses
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   4120 CGAGTTCCTCTGCTCCGCCCGCGAACTCTATGTCAGCCCCGGCTTGTCGCTGCGCACCCC 4179
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 301
                                                                                                                                                                                                                                                                                                                                                                                                                               /note="phospho-N-acetylmuramoyl-pentapeptide translocase"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     3929. 5275
//genc="murD"
//note="UDP-N-acetylmuramyl-L-alanine:D-glutamate ligase;
recombinant enzyme catalyzed the ATP-dependent
addition of D-glutamate to the precursor sugar peptide"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   4000 CTACCTGGCGCGCGCGCGGGTTGCCTTTCGCCGTGGTCGTTACCCGAGAGAACCCGCCGGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     2 GTGCTGATCGGCCTCGCCACCTTGAAGCTGCGTTGAGGACGAAGAGAGCATGAGCCTGAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   62 CGCCTCCGACCACTTCCGCATCGTTGTCGGCCTCGGCAAGAGCGGCATGTCCCTGGTGCG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     122 CTACCTGGCGCGCGCGGGTTGCCTTTCGCCGTGGTCGATACCCGAGAGAACCCGGCGGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 242 CGAGTTCCTCTGCTCCGCCCGCGAACTCTATGTCAGCCCCGGCTTGTCGCTGCGCACCCC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   GCTGGCCACCCTGCGTGCCCAGTATCCGCAGGTGGAAGTGCGTTGCGGCGAACTCGACGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Length 5280;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 .
.
.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    DB 1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Score 1248; DE
Pred. No. 0;
0; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 1759 g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            /transl_table=11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       /transl_table=11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           /product-"MraY"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      /product-"MurD"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        /codon_start=1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        3929. .5275
/gene-"murD"
3929. .5275
                                                                                                                                                                                                                                                                                              2833. .3915
/gene="mray"
2833. .3915
                                                                                                                                                                                                                                                                                                                                                                  2833. .3915
/gene="mraY"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Query Match 86:1%;
Best Local Similarity 99.8%;
Matches 1398; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Ø
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    817
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   182
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 BASE COUNT
ORIGIN
                                                                                                                                                                                                                                                                                                                                                                  CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ŏ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        qq
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        å
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              요
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 /prodecin_id="AAQ45235.1"
/prodecin_id="AAQ45235.1"
/db_xref="G1:12007716"
/db_xref="G1:12007716"
/db_xref="G1:12007716"
/db_xref="G1:12007716"
/db_xref="G1:12007716"
/db_xref="G1:12007716"
/dcanslation="MPMSLSQLEPQAENDLIRELTLDSHGWPPUDLFLTVPGGHQDG
RAHIADALTKGAATAVAYEAEGAGGELPPSDAPLIAVKGLAGAGLSAVAGRFYGEPSRGLD
LIGGYGTNGKTGSVGLYAQALDLIGERGGIVGTGFGFYGALESGRHTTPDPLAVQAT
LATLKQAGARAVAMFVSSHGLDGGRVAALGFDIAVFTNLSRDHLDYHGSMEAYAARA
LATLKQAGARAVAMFVSNLAGABEQDSELTTYSLTDSFAFTARRSSTARKGGLRSPFTAR
RSSIAAKGGLLRSPLIARSNLLAANGALLGLGGCGGDRDAGKRPLAWAIAER
GGGGRPLVVVDYAHTDALEKVLEALRPHAAARLLCLGGCGGGDRDAGKRPLAWAIAER
LADEVLYTDDNRFTEASAAITADIRKGFAAADKYTFLSGRGAIAHLIASAAVDDVVL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        /note="recombinant enzyme catalyzed the ATP-dependent addition of D-alanine-D-alanine to the UDP-N-acetylmuramyl-L-alanine-D-glutamate-m-Dap precursor"
                                                                    BCT 19-JUL-2001
                       5280 bp DNA linear BCT 19-JUL-200 Pseudomonas aeruginosa MurE (murE), MurF (murF), MraY (mraY), and AY008276
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Merck Research Laboratories,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Merck Research Laboratories,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      /gene="murE"
/note="UDP-N-acetylmuramoyl-L-alanyl-D-glutamate:meso-2,
6-diaminopimelate ligase"
                                                                                                                                                                                                                                                                                                                                                       Pseudomonadaceae; Pseudomonas.

1 (bases 1 to 5280)

Azzollan, B.A., Yuan, X., Anderson, M.S. and El-Sherbeini, M.
The cell wall and cell division gene cluster in the Mra operon of Pseudomonas aeruginosa: cloning, production, and purification of active enzymes
                                                                                                                                                                                                                                                                                                                                   Bacteria; Proteobacteria; Gammaproteobacteria; Pseudomonadales;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Direct Submission
Submitted (02-JAN-2001) Biochemistry, Merck Research Labor
Submitted (02-JAN-2001) Biochemistry, Merck Research Labor
Local this Sequence version replaced g1:10719753.

Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          2 (bases 1 to 5280)
El-Sherbeini,M. and Azzolina,B.
Pseudomonas aeruginosa mraY. murD, murE, and murF genes
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   LAGKGHEDYQEIDGVRHPFSDIEQAERALAAWEVPHA"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                3. (bases 1 to 5280)
B1-Sharbelni, and Azzolina, B.
Direct Submission
Submitted (20-SEP-2000) Biochemistry, Merck F
126 E. Lincoln Avenue, Rahway, NJ 07065, USA
E1-Sherbeini, M. and Azzolina, B.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    /organism="pseudomonas aeruginosa"
/mol_type="genomic DNA"
/db_xref="taxon:287"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Protein Expr. Purif. 21 (3), 393-400 (2001)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              /protein_id-"AAG45236.1"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              /transl_table=11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             /transl_table=11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                /product="MurE"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               /product="MurF"
                                                                                                                                                                                              GI:12007715
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                /codon_start=1
                                                                                                                                                                                                                                                                  aeruginosa
                                                                                                                                                                                                                                                                                          Pseudomonas aeruginosa
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          1457. .2833
/gene="murF"
1457. .2833
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           1457. .2833
/gene="murF"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          1. .1464
/gene="murE"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           1. .1464
                                                                                                                                                                                              AY008276.2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       11281713
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      source
                                                                                           DEFINITION
                                                                                                                                                                                                                                                                                              ORGANISM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  REFERENCE
AUTHORS
TITLE
JOURNAL
REFERENCE
AUTHORS
                                                                                                                                                                                                                                                                                                                                                                                                                        AUTHORS
TITLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    TITLE
JOURNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 TITLE
JOURNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      JOURNAL
MEDLINE
                                                                                                                                                            ACCESSION
                                                                                                                                                                                           VERSION
KEYWORDS
SOURCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 gene
RESULT 2
AY008276
                                                                                                                                                                                                                                                                                                                                                                                             REFERENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    REFERENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      AUTHORS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       PUBMED
```

FEATURES

COMMENT

REMARK

CDS

CDS

1382 AGAGGAGCTAGCGTG 1402 	AE016779 301995 bp DNA 11near BCT 12-DEC-2002 Pseudomonas putida KT2440 section 6 of 21 of the complete genome. AE016779 AE015451 AE016779.1 GI:26557023	Pseudomonas putida KT2440 Pseudomonas putida KT2440 Bacteria; Proteobacteria; Gammaproteobacteria; Pseudomonadales; Pseudomonadacee; Pseudomonas.	<pre>i (bases 1 to 30139) Nelson, K., Paulsen, I., Weinel, C., Dodson, R., Hilbert, H., Fouts, D., Gill, S., Pop, M., Martins Dos Santos, V., Holmes, M., Brinkac, L., Beanan, M., Deboy, R., Daugherty, S., Kolonay, J., Madugu, R.,</pre>	Nelson, W., White,O., Peterson,J., Khouri,H., Hance,L., Lee,P., Holtzapple,E., Scanlan,D., Tran,K., Mazzez,A., Utterback,T., Rizzo,M., Lee,K., Kosack,D., Moestl,D., Wedler,H., Lauber,J., Hoheisel,J., Straetz,M., Helm,S., Klewitz,C., Elsen,J., Timmis,K.,	Ducsclaint. A fumilier, b. and trast. and analysis of the Complete genome sequence and comparative analysis of the metabolically versatile Pseudomonas putida KT2440 Environ. Microbiol. 4 (12), 799-808 (2002)	<pre>2 (bases 1 to 301995) Nelson,K., Paulsen,I., Weinel,C., Dodson,R., Hilbert,H., Fouts,D., Gill,S., Pop,M., Martins Dos Santos,V., Holmes,M., Brinkac,L., Beanan,M., DeBoy,R., Daugherty,S., Kolonay,J., Madupu,R.,</pre>	Nelson,W., White,O., Peterson,J., Khouri,H., Hance,I., Lee,P., Holtzapple,E., Scanlan,D., Tran,K., Woazzez,A., Utterback,T., Rizzo,M., Lee,K., Kosack,D., Moestl,D., Wedler,H., Lauber,J., Hoheisel,J., Straetz,M., Heim,S., Klewitz,C., Eisen,J., Timmis,K.,	Duesternoir, Tummier, b. and Fraser, c. Direct Submission Submitted (05-NOV-2002) The Institute for Genomic Research, 9712 Medical Center Dr., Rockville, MD 20850, USA	Location/Qualifiers 1301995 /organism="Pseudomonas putida KT2440" /mol_type="genomic DNA"	/srrain="KT2440" /db_xref="taxon:160488" 89712 /gene="sspA"	/locus_tag="PP1320" 89. 712 /gene="sppA" /locus_tag="PP1320"	/note="similar to GP:9864180; identified by sequence similarity; putative" /codon_start=1 /transl_table=11	/product="stringent starvation protein A" /protein_id=AaN66944.1" /db_xref==GI:24982777" /translation="MGATNRLACYSDPADHYSHRVRLVIAEKGVSVQLIDVDPAHLPR	KLARVIPYGSYRILVDRDIALYESTYVMEYLEERYPHPELMPYYPVARGNSRLLMHRI QRDWCALADTVLDPRSSEAARTEARKALRESLTGVSPLFSEFACFMSDEQSLVDCCLL PILMRLPVLGTLELPRQAKPLLDYMERGFAREPFQASLSSVEREMRKL" (5331154	/gene="sspb" /locus_tag="ppl321" 6931154 /gene="sspb"	/locus_tag="PP1321" //ocus_tag="similar to GB:S50157, GB:X60221, \$P:P24539, and PID:509291; identified by sequence similarity; putative" /codon_start=1 /transl_table=11
Qy . 138 Db 526	RESULT 3 AE016779 LOCUS DEFINITION ACCESSION VERSION KEYWORDS	SOURCE ORGANISM	AUTHORS		TITLE JOURNAL	REFERENCE AUTHORS		TITLE JOURNAL	FEATURES Source	gene	CDS			gene	CDS	
<b>o</b>		σ.	a	<u> </u>		0.			9	1 0		9	1			
302 TGCGCTGGTACAGGCGCGCGAAAGGCGTGCGCATCTCCGGTGACATCGATCTTCGC 361 	362 CCGCGAGCCGATCGTCGCCTCCACCGGTTCCAACGCGAAGACCCGTGAC 421 [11111111111111111111111111111111111	482 CGGCACCCCGGCGCTCGACCTGCTGCTGCGACGACTGTACGTGTTGGAGCTGTC 541	542 GAGCTTCCAGCTGGAAACCTGCGATCGCCTCAACGCCGAGGTGGCGACCGTGCTGAACGT 601	602 CAGCGAAGACCATATGGATCGCTACGACGGCATGGCTGACTACCACCTGGCCAAGCACCG 661 	662 GATCTTCCGCGGTGCCCGCCAGGTCGTGGTGAATCGCGCCGATGCCCTGACCCGACCGCT 721	722 GATCGCCGATACCGTGCCTGCTCGTCGGCCTGAACAAGCCGGACTTCAAGGCTTT 781 	782 CGGCCTGATCGAGGAAGACGCCAGAAGTGGCTGGCGTTCCAGTTCGACAAGCTGCTGCC 841	842 GGTTGGCGAACTGAAGATCCGTGGCGCCCACAACTATTCCAACGCGCTCGCCGCGCTGGC 901	902 GCTGGGCCATGCGGTCGGCCTTCGACGCCATGCTCGGCGCGCTGAAGGCGTTTTC 961	962 CGGCCTGGCTCATCGCTGCCAGTGGGTACGCGAGGGCGTGAGGCGTGAGCACTACGAGGA 1021	1022 TTCCAAGGCCACCAACGTCGGCGCCCCTGGCGGGGATCGAGGGGCTGGGTGCCGACAT 1081	1082 CGACGGCAAGCTGGTGCTCGCCGGCGGAGCGCAAGGGCGCCGATTTCCATGACCT 1141	1142 GCGCAGCCGGTCGCGCGCTTCTGCCGGCGGTGGTACTGCTTGGCCGTGACGCCGGGCT 1201	1202 GATTGCCCAGGCACTGGGCAACGCGGTACCGCTGGCGCGTCGCAACGCTGGACGAAGC 1261 	1262 AGTCCGGCAGGCCGCGAGCTGGCCCGCGAAGGCGATGCGGTGCTGTTGTCGCCGGCCTG 1321	1322 GGGGGGCGTGGACATGTTCAAGAACTTCGAAGGACGCGGACGCCTGTTCGCCAAAGCCGT 1381 
oy Db	90 QX	Oy Dp	oy og	Oy Op	oy op	Oy Op	O Pp	oy o	Sp GS	Qy Dp	oy O	QY Dp	S S	oy Op	Qy Dp	OY Dp

```
POYREDPATATION OF THE CONTROL OF THE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             /product="conserved hypothetical protein TIGR00242"
/protein_id="AaN6691.1"
/db_xref="G1:24982786"
/translation="WMGITAVFRGANAVSLDARGRLAMPSRYRDELDSRCNGQLIVTI
DAVDPCLCYPLDEREXIEALPSLREBNRRLQRLLIGNAVDLELDGSGRFLVPP
RIREYAKLDRKAMLVGQLNKFQLWDEDAWNAVSAADLAAIQQPGAMPDELRDLIL"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               /product-"conserved hypothetical protein rigr00006"
/protein_id="AAN66952.1"
/protein_id="AAN66952.1"
/d_xref="G1:249827NHTVLDEAVEALALRADGCYLDGTFGRGGHSRLIL/translation="WHTDSGFNHTTVLLDEAVEALALRADGCYLDGTFGRGGHSRLILSKLGFDKDPQALATGQALAAEDGRFVIVQRSFAELGAEVAARGLHGKVSGV
                                                                                                                                                                                                                                                                                               /translation="MCAVTDVAGASKSTVGTLYVVATPIGNLDDMSARALKVLADDVAL
IAAEDTRHSIRLLQHFGIDTPLAACHEHNERDEGGRFLSKLLAGENVALVSDAGTPLI
SDPGYHLVRQARAAGVSVVPVPGACALIAALSAAGLPSDRFIFEGFLPAKQAGRRARL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   LLDIGVSSPQLDDPERGFSFLNDGPLDMRMNPDQGVSAAEFIATAPVEEIARVFKEYG
EERFAGRMARAVVERREKQPFTRTADLAEVLKVANPAWEKGKNPATRAFQGLRIHVNN
ELGDLEAGLEAALDALEVGGRLAVISFHSLEDRIVKLFMRKLVKGEADNLPRNLPVQH
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              6455. .6928
/locus_taq-"PP1328"
6455. .6928
/locus_tag-"PP1328"
/note-"identified by match to PFAM protein family HMM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Jocus_tag="PP1330"
/note="similar to GB:M11186, GB:M62611, SP:P01178,
PID:189411, PID:386991, and PID:825699; identified by
sequence similarity; putative"
                                      match to PFAM protein family HMM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            /locus_tag="PP1329"
/note="similar to GP:9950652; identified by sequence
similarity; putative"
/codon_start=1
                                                                                                                                                                            /product-"tetrapyrrole methylase family protein"
/protein_id-"AaN66950.1"
/db_xref-"GI:24982784"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Length 301995;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    13867 TTCCGCATCGTTGTCGGCCTCGGCAAGAGCGGCATGTCCCTGGT 13910
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          75 TTCCGCATCGTTGTCGGCCTCGGCAAGAGCGGCATGTCCCTGGT 118
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              KVFEPKIKLIGKAQFASEAELKANPRSRSAVMRVAEKLR"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            3.0%; Score 44; DB 1; I
100.0%; Pred. No. 6.1e-10;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               100.0%; Pred. No.
/locus_tag="PP1326"
/note="identified by
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        6925. .7872
/locus_tag="PP1329"
6925. .7872
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        /gene="ftsL"
/locus_tag="PP1330"
7869. .8162
                                                                                                                                             /transl_table=11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            /codon_start=1
/transl_table=11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                /transl_table=11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  /gene="ftsL"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              PF02381"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Best Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     44;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              RESULT 4
AX189058
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  õ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             /product-"phosphoheptose isomerase"
/protein_id-"AAN66947.1"
/db_xref="G1:34982780"
/translation-"MOSRIRRLFEASIETKQOAMDILAPHIEQASLVMVNALLNEGKM
ACKONGGAGOAQHESSELLNRFERRENSLAAITTOSSTITSIANDYSYNEYFSKQ
IRALGOPGDVLLAISTSGNSANVIQAIQAABDREMIVVALTGRDGGGMASLLPEDVE
IRVPSTVTARIOEYHLLAIHCLCDLIDSQLFGSEE"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 PLIGGGAASTNIDATWALVASIPABOLOQPPINDOTIAGWTSLAFAYKSAGTLEOOODA
TRAWKQHDPHPAAQOLPLALTKIKELASOPLTKIALLIPOBGPLAGVARALRDGFWA
AHFOAQOSGQPAPAVQVFDSSRIGSLDDFYRQAQAGVQUVIGPLEKPLVKOLAAKPO
LPITTLALNYADAGGAAPQLEOFGLAABDBARBVARRARAGGMYRAVALVPSGEWGD
RVLAAFRODWGGVGAPPQLEOFGLAABDBARBVARRARAGGWYRAVALVPSGEWGD
RVLAAFRODWGGVGTLLAAERIAQPVALAQOIADLFOLRQSBGRAKSLQSTVGGSIA
AGPSRRQDIDFIFLASTPQQAQOIKPLNFQYAGDVYATSNLYSANGDINOYNDWN
GIRFCETPWLLDTSNSRRQOVYQQPQAGSIGRIYAMGVAYSLABRLGGLKALPDN
RVLGLSGSLSINANORVERQLPWAEFSGGQVKRLPDTVR"
                                                                                                       /translation="MKCASFKEPLMNSSRPYLVRALYEWIVDNDCTPHMLVNAEFRVV
QVPDGFASDGQIVLNISPSAVRSLHMDNDAVSFEGRFSGVAHSLFVPVGAILGIYARE
NGQGMVFELEPSSMDGDELEDDDVQPDDDGPPDDGGQPPRPTGRPSLKVVK"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            /translation="MPPREGEMALTICESVTGCSSVLTSTRNSPIEDDRGTRTIGSK IDDGLIETKAAVNISKANPRIDKGSHIVVSSYNGIVLLAGGTPRADLKSLAEGTASGV GVKKVHNELGVWOPSSILARNNDAMLTTKIKTGMLTDSAVPSSRIKVITENGIVYLL GLYTROBANSATAVVGGVSGVQKIVKLFEXID"

complement(1791. 2378)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      /translation="MIACLRILTALCLAALLAACASSPSSSIGELPRTPDASIEQLIE
KAASSKSAEDAALLRISAADLAYKOKDFPRAARILEQVPLDTIKPAQOVFASTLAAEL
AMSRNOPKAALTALAHPSLQRIAELPADLQARTYSVHAAALEADGGALAAAQORILLA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             /translation="MMAAASPTRAGQAAETQALEYLQGQGLQLLARNWRCKGGELDLV
MLDADTVVFVEVEVRYRLHAGFGGALDSIDGRKQKRLVLAATLFLQKEAHWGNYPCRFDV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           complement(2471. 2845)
/locus_tag="PP1324"
/note="identified by match to TIGR protein family HMM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    /note="identified by match to PFAM protein family HMM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  /product-"conserved hypothetical protein TIGR00252"
/protein_id-"AAN66948.1"
/db_xref-"GI:24982782"
   /product="stringent starvation protein B"
                                                                                                                                                                                                                                                                                                                                                                                                                                            /product-"lipoprotein, putative"
/protein_id="AAN66946.1"
/db_xref="GI:24982779"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  /product="lipoprotein, putative"
/protein_id="AAN66949.1"
/db_xref="G1:24982783"
                                  /protein_id="AAN66945.1"
/db_xref="GI:24982778"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  /locus_tag-"pp1324"
complement'''
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        /locus_tag="Pp1325"
complement'.out
                                                                                                                                                                                                                  complement(1216. .1794)
/locus_tag="pp1322"
complement(1216. .1794)
/locus_tag="pp1322"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       /gene="gmhA"
/locus_tag="PP1323"
complement(1791. .2378)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             complement(2842. .4659)
/locus_tag="PP1325"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     VALQGSHHAGRPLQWLKNAFEC"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 /locus_tag="PP1323"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  /locus_tag="PP1326"
4837. .5721
                                                                                                                                                                                                                                                                                                                                                                                                  /transl_table=11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                /codon_start=1
/transl_table=11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   /transl_table=11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                /transl_table=11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                /codon_start=1
                                                                                                                                                                                                                                                                                                                                                                   /codon_start=1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             /codon_start=1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               /gene="gmhA"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      TIGR00252
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          PF01380"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                gene
                                                                                                                                                                                                                          gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               CDS
                                                                                                                                                                                                                                                                                           CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            CDS
```

ö

```
DKLPEAVERHTGSLNDEWLMAADLIYASPGIALAHPSLSAADAGIEIVGDIEFECER
AQAPIVAITGSNGKSTVTTLVGEMAKAAGVNVGVGGNIGLPALMLLDDECELYVLELS
SFQLETTSCAAVTATILNVTEDHMDRYPFGLQQYRAAKLIYTENAKVCVVNADDALT
MPIRGADERCVSFGVNMGDYHLNHQOGEFWLRVKGEKVLNVKRMKLSGGHNYTNALAR
VALADAAGLPRASSLAALTTFTGLPHFFVYLEHNGYRWINDSKATNVGSTEAALNGI
HVDGTLHLLLGGDGKSADFSPLARYLNGDNVRLYCFGRDGAQLAALRPEVAEQTETME
QAMRLLAAPRVQPGDMYLLSPACASLDQFKNFEQRGNGFFRAKELG"
                                                                                                                                                                                                                                                                                            /protein_id="CAA35611.1"
/db_xref="01:42046"
/db_xref="8WISS-046"
/db_xref="8WISS-PROT:P14900"
/translation="MADYOGKNVVIIGLGITGLSCVDFFLAAGVTPRVMDTRWTPPGL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     BCT 12-SEP-1993
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Submitted (15-MAR-1990) Flouret B., URA 1131 du Centre National de la Recherche Scientifique, C N R S, Biochimie Moleculaire et Cellulaire, Batiment 432 Universite Paris-Sud, 91405 Orsay, France Sequence independently determined by [3], but authors accept sequence [1] as definitive.

Location/Qualifiers

1. 2608
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Escherichia coli

Escherichia coli

Bacteria; Proteobacteria: Gammaproteobacteria; Enterobacteriales;

Enterobacteriaceae; Escherichia.

1 (bases I to 2608)

1 (bases I to 2608)

Nucleotide sequence involving murb and an open reading frame ORF-Y

spacing murF and ftsW in Escherichia coli

Nucleic Acids Res. 18 (4), 1058 (1990)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ECMUROY

ESCHETICHIA COLI MULD gene and ORF-Y (EC 6.3.2.9).

ESSTS44 X52117

X51584.1 GI:42058
membrane protein; murD gene;
UDP-N-acetylmuramoyl-L-alanyl-D-glutamate synthetase; unidentified
                                                                                                                                                                                     227 .1543
/note="UDP-N-acetylmuramoyl-L-alanine:D-gluta ligase (AA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Submitted (02-JAN-1989) Ikeda M., Institute of Applied Microbiology, The University of Tokyo, 1-1-1 Yayoi, Bunkyo-ku,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      1.7%; Score 24; DB 1; Length 1629;
100.0%; Pred. No. 5;
.ive 0; Mismatches 0; Indels
                                                                                                                                          212. .216
/note="ribosome binding site"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      /organism="Escherichia coli"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           389 t
                                           /organism="Escherichia (/mol_type="genomic DNA" /strain="K12"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 537 CIGICGAGCTTCCAGCTGGAAACC 560
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     701 CTGTCGAGCTTCCAGCTGGAAACC 724
                                                                                                                      /db_xref="taxon:562"
         Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        486 g
                                                                                                                                                                                                                                                                            /transl_table=11
                                                                                                                                                                                                                                                     /codon_start=1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Tokyo 113, Japan
3 (bases 26 to 1354)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   (bases 1 to 2608)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           403 c
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        11 Similarity 100.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Direct Submission
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Submission
                                                                                                                                                                                                                              1-438)"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    reading frame.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Flouret, B.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Ikeda, M.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             351
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Direct
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Query Match
Best Local S
Matches (24
                                    source
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      source
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       DEFINITION
ACCESSION
VERSION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        BASE COUNT
ORIGIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              TITLE
JOURNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ORGANISM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   AUTHORS
TITLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       TITLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               REFERENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       AUTHORS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    REFERENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       AUTHORS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          MEDLINE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 PUBMED
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   REFERENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   JOURNAL
                                                                                                                                             RBS
                                                                                                                                                                                     CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         RESULT 6
           FEATURES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           KEYWORDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             FEATURES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ECMUROY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  COMMENT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         SOURCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ŏ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          d
                                                                                                                                                                                                                                                                                                                                                                                                                                                                /codon_start=1
/transl_table=11
/transl_table=11
/transl_table=11
/downer=15142765"
/downer=15142765"
/downer=15142765"
/downer=15142765"
/downer=15142765"
/translation="MADYOGKNVIIGLGLTGLSCVDFFLARGVTPRVMDTRMTPPGL
/translation="MADYOGKNVIIGLGLTGLSCVDFFLARGVTPRVMDTRMTPPGL
/translation="MADYOGKNVIIGLGLTGLSCVDFFLARGVTPRVMDTRMTPPGL
/translation="MADYOGKNVIIGLGLTGLSCRE
AQAPIYATGSGRSTVTTAGEMARAAGIYVTEDHSTPGLAGARGLEAMLAGEMALAGAGLFRAGERCVSFGVNMGDYHLNHQOGETWLRVKGEKVLNVKEMKLSGQHNYTNALAA
LALADAGLFRASSLKALTTFTGLPHRFEVVLEHNGYRWINDSKATNVGSTEAALNGL
HVDGTLHILLGGGGKSADFSPLARYLNGDNVRLYCFGRDGAQLAALREVAEQTFTME
QAMRILAARVQGGDWYLLSPACASLOGFKNFEQRGNEFARLEG"

QAMRILAARVQGGDWYLLSPACASLOGFKNFEQRGNEFARLEGG"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Submitted (23-NOV-1989) Mengin-Lecreulx D., URA 1131 du CNRS, Biochimie Moleculaire et Cellulaire, Batiment 432, Universite Paris Sud, 91405 Orsay, France **map: map position=2 minutes; Data kindly reviewed (26-FEB-1990) by Mengin-Lecreulx.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    BCT 12-SEP-1993
           PAT 08-AUG-2001
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Escherichia coli

Escherichia coli

Bacteria; Proteobacteria; Gammaproteobacteria; Enterobacteriales;

Enterobacteriaceae; Escherichia.

1 (bases 1 to 442; 476 to 1629)

Mengin-Lecreulx,D. and van Heijenoort,J.

Morieotide sequence of the murD gene encoding the

UDP-MurNAc-L-Ala-D-Glu synthetase of Escherichia coli

Nucleic Acids Res. 18 (1), 183 (1990)
                                                                                                                                                            Bacteria; Proteobacteria; Gammaproteobacteria; Enterobacteriales;
Enterobacteriaceae; Escherichia.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Escherichia coli murD gene for UDP-N-acetylmuramoyl-L-alanine:D-glutamate ligase (EC 6.3.2.9)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Gaps
                                                                                                                                                                                                                        Forsyth, R.A., Ohlsen, K.L. and Zyskind, J.W.
Genes identified as required for proliferation of E. coli
Patent: Wo 0148209-A 259 OS-JUL-2001;
Elitra Pharmacetticals, Inc. (US)
Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     1.7%; Score 24; DB 6; Length 1317;
100.0%; Pred. No. 5.2;
ive 0; Mismatches 0; Indels
           linear
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          murD gene; peptidoglycan synthesis;
UPD-N-acetylmuramoyl-L-alanine:D-glutamate ligase.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    linear
                                                                                                                                                                                                                                                                                                                                                                                                                                                    /note="unnamed protein product"
           DNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      DNA
                                                                                                                                                                                                                                                                                                                                                              coli"
1317 bp i
Sequence 259 from Patent WO0148209.
AX189058
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    1629 bp.
                                                                                                                                                                                                                                                                                                                                                         /organism="Escherichia of /mol_type="genomic DNA" /db_xref="taxon:562"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           537 CTGTCGAGCTTCCAGCTGGAAACC 560
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    475 CTGTCGAGCTTCCAGCTGGAAACC 498
                                                                        AX189058.1 GI:15142764
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             2 (bases 1 to 1629)
Mengin-Lecreulx, D.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      X17609.1 GI:42045
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  24; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Direct Submission
                                                                                                                                                                                                                                                                                                                                                                                                                                  1. 1317
                                                                                                                 Escherichia coli
Escherichia coli
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Escherichia coli
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       294
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         2129548
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ECMURD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Query Match
Best Local S
Matches 24,
                                                                                                                                                                                                                                                                                                                                            source
                                                                                                                 SOURCE
ORGANISM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       BASE COUNT
                             DEFINITION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      DEFINITION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   REFERENCE
AUTHORS
TITLE
                                                                                                                                                                                                                                                 TITLE
JOURNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             REFERENCE
AUTHORS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      TITLE
JOURNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ORGANISM
                                                    ACCESSION
                                                                                                                                                                                                        REFERENCE
                                                                                                                                                                                                                            AUTHORS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ACCESSION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  MEDLINE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         PUBMED
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        VERSION
KEYWORDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              JOURNAL
                                                                                               KEYWORDS
                                                                                                                                                                                                                                                                                                                                                                                                                             CDS
                                                                                                                                                                                                                                                                                                                   FEATURES
                                                                      VERSION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               COMMENT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    RESULT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ECMURD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ORIGIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     SOURCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              δ
```

```
Chases 1 to 11441)
Jin, O., Shen, Y., Wang, J.H., Liu, H., Yang, J., Yang, F., Zhang, X.B., Zhang, J.Y., Yang, G.W., Wu, H.T., Dong, J., Sun, L.L., Xue, Y., Zhang, J.Y., Yang, G.W., Wu, H.T., Dong, J., Sun, L.L., Xue, Y., Zhao, A.L., Gao, Y.S., Zhu, J.P., Chen, S.X., Yao, Z.J., Wang, Y., Direct Submission
Submitted (08 MAY-2001) Microbial Genome Center of Chinese Ministry of Public Health, 100 Yingxin Jie, Xuanwu Qu, Beijing 100052, P.R. China
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          /product-"orf, conserved hypothetical protein"
/protein_id-"aAN41743.1"
/db_xref-"or1:24050284"
/translate.or1:24050284"
/translate.or1:24050284
/translate.bypergrenergenergatunnbskgrisvpffkyregilenaag
@MVCTIDIHHPOLLLYPLPERGRIEGKLSRIJSMNPYERRVORLLIGHASECOMDGAG
RILIAPVLRQHAGITKEVMLVGQFNKFELMDETTWHQOVKEDIDAEQLATGDISERLO
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     /translation-"MMENYKHTVULDEAVNGLNIRPDGIYIDGTFGRGGHSRLILSQ
LGEEGRLLAIDRDPQALAVAKTIDDRRFSIIHGPFSALGEYVAERDLIGKIGGILLDL
GVSSPQLDDABRGFSFWRDGPLDMRNDPTRGQSAAEMLQTAEBADIAWVLKTYGEEHF
AKRIARAITVERNREQPWTRELAEWVAAATPVKDKFKHPATRTFQAVRIWVNSELEE
IRQALKSSLWYLAPGGRILSIISFBLEDRIYKRFWRRSRGPQVPAGLPMTEBQLKKL
GGRQLRALGKLMPGGEEVAENPRARSSVLRIABRTNA"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    /protein_id="aan41745.1"
/protein_id="aan41745.1"
/da_xxef="cd::24050286"
/translation="xSRYTEXEXKKGSMGSHERHALPGVIGDDLLRFGKLPLCLFI
CIILTAVTVVTTAHHTTRLLTAQREQLVLERDALDIEWRNLILEENALGDHSRVERIAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            /locus_tag="sF0078"
//locus_tag="sF0078"
//locus_tag="sF0078"
//locus_tag="sesidues 13 to 164 of 164 are 99 pct identical to residues 1 to 152 of a 152 aa protein from Escherichia coli 0157:H7 EDL933 ref: NP_285777.1"
//codon_start=1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               /locus_tag="SF0079"
/note="Residues 1 to 313 of 313 are 99 pct identical to residues 34 to 346 of a 346 aa protein from Escherichia coli pir: QQECFT"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    /locus_tag="sF0080"
/note="Residues 1 to 121 of 121 are 100 pct identical tresidues 1 to 121 of a 121 aa protein from Escherichia col1 0157:HF EDL933 ref: NP_2865779.1"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       at
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       /product-"cell division protein; ingrowth of wall
                                                                                                                                                                                                                                                                                                                                                 str. 301"
        Nucleic Acids Res. 30 (20), 4432-4441 (2002)

    11441
    organism="Shigella flexneri 2a

                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       /product-"yabc protein"
/protein_id-"AAN41744.1"
/db_xref-"GI:24050285"
                                                                                                                                                                                                                                                                                                                                                                       /mol_type="genomic DNA" /strain="301"
                                                                                                                                                                                                                                                                                                                                                                                                                                                          /db_xref-"taxon:198214"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         /gene="yabc"
/locus_tag="SF0079"
788. .1729
/gene="yabc"
                                                                                                                                                                                                                                                                                                    Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               /locus_tag="SF0078"
292. .786
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    /jocus_tag="SF0080"
1726. .2091
/gene="ftsL"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      /transl_table=11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 /transl_table=11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              /transl_table=11
                                                                                                                                                                                                                                                                                                                                                                                                                                    /serotype="2a"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           /codon_start=1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                /codon_start=1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              /gene="yabB"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        1726. .2091
/gene="ftsL"
                                                                                                                                                                                                                                                                                                                                source
                                                                                                                                                                                           TITLE
JOURNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           gene
           JOURNAL
                                   PUBMED
                                                          REFERENCE
                                                                                        AUTHORS
                                                                                                                                                                                                                                                                                                  FEATURES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Shigella flexneri 2a str. 301
Shigella flexneri 2a str. 301
Shigella flexneri 2a str. 301
Bacteria: Proteobacteria: Gammaproteobacteria: Enterobacteriales;
Enterobacteriaceae; Shigella.

E (bases 1 to 11441)
Jin,Q., Xuan,Z.H., Xu,J.G., Wang,Y., Shen,Y., Lu,W.C., Wang,J.H.,
Liu,H.T., Dong,J., Yang,F., Qu,D., Zhang,X.B., Zhang,J.Y., Yang,G.W.,
Wu,H.T., Dong,J., Yang,F., Xu,L.L., Xue,Y., Zhao,A.L., Gao,Y.S., Zhu,J.P.,
Kan,B., Chen,S.X., Yao,Z.J., He,B.K., Chen,R.S., Ma,D.L.,
Qiang,B.Q., Wen,Y.M., Hou,Y.D. and Yu,J.
Genome sequence of Shigella flexneri 2a: insights into
pathogenicity through comparison with genomes of Escherichia coli
                                                                                                                                                                                                                                                                                                                  /translation-"MLVWLABHLVKYYSGFNVFSYLFFRAIVSLLTALFISLWMGPRM
IAHLQKLSFGQVVRNDGPESHFSKRGTPTMGGIMILTAIVISVLLMAYPSNNYVWCVL
VVLVGYGIGFVDDYRKVYKDTMGLIARWXYFMWSVIALGYARALITAGKDFPATQL
VVPFFKDVMPQLGLFYTLLAFYFVIVGTGNAVVITDGLDGLAIMPTYFVAGGFALVAWA
TGNNNFASYLHIPYLRHAGELVIVCTAIVGAGGFLWFNTYPAQVFMGDVGSLALGGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         AQAPIVAITGSNGKSTVTTLVGEMAKAAGVNVGVGGNIGLPALMLLDDECELYVLELS
STOLETTSZAQAVAATILNVTEDHUMPRY PFGLQGYGYRAAKLIYTENAKYCVVNADDALT
MPIRCADERCVSFGYNMGDYBLHUROGETWILRVKGEKVLNVKEMKLSGGHNYTNALAA
LALADAAGLPRASSLKALTTFTGLPHRFEVVLEHNGYRWINDSKATNVGSTEAALNGL
HVDGTLHLLLGGDGKSADFSPLARYLNGDNYRLYCFGRDGAQLAALRPEVAEGTETME
OMMILLAPRVQPGDNYLLSPACASLDQFKNFEQRGNEFARLAKELG"
631 c 777 g 670 t
                                                                                                                                                                                                                                                                                                                                                                                                                                                          LGIIAVLLRQEFLLVIMGVFVVETLSVILQVGSFKLRGQRIFRMAPIHHYELKGWP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       /translation="MADYQGKNVVIIGLGLGCVDFFLARGVTPRVMDTRWTPPGL
DKLPEAVERHTGSLNDEWLMAADLIVASPGIALAHPSLSAAADAGIEIVGDIELFCRE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 A linear BCT 18-OCT-2002
9 of 412 of the complete
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    DB 1; Length 2608;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      0; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  /note="murD gene product (AA 1-438)"
                                                                                                              /note="pot. ribosome binding site"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        /note="pot. ribosome binding site"
1196. 2512
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 DNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           AE015046 11441 bp DNA
Shigella flexneri 2a str. 301 section
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              /db_xref-"SWISS-PROT:P14900"
                                                                                                                                                                                                                                                                                               /db_xref-"SWISS-PROT:P15876"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                EPRVIVRFWIISLMLVLIGLATLKVR"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            1.7%; Score 24; DB
100.0%; Pred. No. 4.7
Live 0; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         /transl_table=11
/protein_id="CAA35933.1"
/db_xref="GI:42060"
                                                                                                                                                                                                                                          /protein_id="CAA35932.1"
/db_xref="GI:42059"
                                                                                                                                                                /note="ORF-Y (AA 1-360)"
/mol_type="genomic DNA"
/db_xref="taxon:562"
/map="2min"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  /note="pot. -35 region"
1043. .1048
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      /note="pot. -10 region"
1181. .1185
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      537 CTGTCGAGCTTCCAGCTGGAAACC 560
                                                                                                                                                                                                                  /transl_table=11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       GI:24050283
                                                                                                                                                                                           /codon_start=1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        /codon_start=1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Ouery Match
Best Local Similarity 100.C
Matches 24; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  genome.
AE015046 AE005674
AE015046.1 GI:240
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         1018.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    530
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         1670
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              promoter
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                promoter
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    BASE COUNT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       DEFINITION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ORGANISM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ACCESSION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       RESULT 7 AE015046
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    REFERENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           AUTHORS
                                                                                  RBS
                                                                                                                                    CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  RBS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    VERSION
KEYWORDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               TITLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ORIGIN
```

à 8

gene

CDS

```
2SHAISTASGVGEHFADKTALITRLKSLIAEQQVITILVKGSRSAAMEEVVRALQENG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         BCT 21-MAR-2001
3, section 9 of
                                                                                                                                                                                                                                                                    ಭ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Escherichia coli O157:H7 EDL933
Escherichia coli O157:H7 EDL933
Bacteria; Proteobacteria; Gammaproteobacteria; Enterobacteriales;
Enterobacteriaceae; Escherichia.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                l (bases 1 to 12791)
Perna, N.T., Plunkett, G. III, Burland, V., Mau, B., Glasner, J.D.,
Rose, D.J., Mayhew, G.F., Evans, P.S., Gregor, J., Kirkpatrick, H.A.,
Grotbeck, E.J., Hackett, J., Klink, S., Boutlin, A., Shao, Y., Miller, L.,
Apodaca, J., Amantharaman, T.S., Lin, A., Yen, G., Schwartz, D.C.,
Welch, R.A. and Blattner, F.R.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Tobases 1 to 12791)
Perna, N.T., Plunkett, G. III, Burland, V., Mau, B., Glasner, J.D., Rose, D.J., Mayhew, G.F., Evans, P.S., Gregor, J., Kirkpatrick, H.A., Posfai, G., Hackett, J., Klink, S., Buutin, A., Shao, Y., Miller, L., Grotbeck, E.J., Davis, N.W., Lim, A., Dimalanta, E., Potamousis, K.,
                                                                                                                                                                                           /gene="mray"
/locus_taq="SF0084"
/note="Residues 1 to 360 of 360 are 100 pct identical tresidues 1 to 360 of a 360 aa protein from Escherichia coli K12 ref: NP-414629.1"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     /note=_Residues 1 to 438 of 438 are 99 pct identical to residues 1 to 438 of a 438 aa protein from Escherichia coli K12 ref: NP_414630.1"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Genome sequence of enterohaemorrhagic Escherichia coli 0157:H7
Nature 409 (6819), 529-533 (2001)
21074935
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                /product="phospho-N-acetylmuramoyl-pentapeptide
transferase?"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          DB 1; Length 11441; 3.7;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         AE005185 12791 bp DNA linear
Escherichia coli O157:H7 EDL933 genome, contig 1 of
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        100.0%; Prea. ...
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          1.7%; Score 24;
100.0%; Pred. No.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          8255 CTGTCGAGCTTCCAGCTGGAAACC 8278
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           537 CTGTCGAGCTTCCAGCTGGAAACC 560
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          /locus_tag="SF0085"
7781. 9097
/gene="murD"
                                                                                                                            locus_tag="SF0084"
                                                                                                                                                                                                                                                                                                                                                                     /codon_start=1
/transl_table=11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        /transl_table=11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       AE005185 AE005174
AE005185.1 GI:12512782
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      7781. .9097
/gene="murD"
                                                                                                 /gene="mraY"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Best Local Similarity
Matches 24; Conserv
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      11206551
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ORGANISM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            DEFINITION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 TITLE
JOURNAL
MEDLINE
PUBMED
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ACCESSION
VERSION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               REFERENCE
AUTHORS
                                                                        gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        AUTHORS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           RESULT 8
AE005185
LOCUS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         KEYWORDS
SOURCE
                                                                                                                                                                      CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Ω
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              /product="United States of the American States of the American States of Continuo States 
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          LQVISPDMLVKEGDMRSLRVQQVSTSKGMITDRSGRPLAVSVPVKALWADPKRVHDAG
GISVGDRWKALANAINIPLOQISARINAPKGRFITARAVSVPVKALWADPKRVHDAG
GISVGDRWKALANAINIPLOQISARINAPKGRFITYLARQVNSDMADYIKKIKLPGIH
ERESRRYTYSTSGEVTAHLIFFINDSQGIEVGVERSPRWKHTAGOPGERIVRKDBYGRVI
EDISSTDSQAAHNILASIDERLQALVYRELINAVAENKAESGSAVLVDVNTGERVLAW
NSPSYNPNNLSGTPKEAMRNRTITDVFEPGSTVKPMVWTALQRGVVRENSVLNTIPY
RINGHEIRVONARYSELTLTGVLQKSSNVGVSKLALTWRSSALVDTYSRFGIGKATNLG
LVGRSGLYPQKQRMSDIFRATFSFGYGLMYTPLQLARVYNTATIGSYGIYRPLSITKVD
PPVPGRSVFPESIYRVVHWESSYALDGGGGVKAAIKGSRIFKVGFPGRYV
NYTRYTYRYAPASQPRFALVVVINDPQAGKYXGGAVSAPVFGAIMGGVLRTMNIEPD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         /translation="MISYTLSQLTDIINGELQGADITLDAVTTDTRKIIPGCLEVALK
GERFDAHDFADQAKAGGAGALLVSRPLDIDLPQLIVKDTRLAFGELAAWVRQQVPALV
VALTGSSGKTSVKEWTRAILSQCGNTLYTAGNLINDIGVPMTLLRLFPEYDYAVIELG
ANHQGEISAGTYSVETRPRAALVNNLAAAHLEGFGSLAGVAKAKGEIFSGLPENGIAIN
ADNHDNLAWQSVIGSRKWYRFSPNAANSDFTATNIHVTSHGMEFTLQFFGSDVLLP
LPGRHNTANLAAAALSMSVGRTLDAIKAGLANLKAVPGRLAEVQLAENQLLADDSYN
ANVGSWTAAVQVLAEMPGYRVLVVGDWAELGAESEACHVQVGEAAKAAGIDDSYN
                                                                                                                                                                                                                                                                                                                                                                                             /product-"septum formation; penicillin-binding protein 3; peptidoglycan synthetase" protein_id="AaN41746.1" /db.xref="G1:24050287" /translation="MKAAAKTQKPKRQEEHANFISWRFALLCGCILLALAFLLGRVAW
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    //ocus_tag="SF0082"
3860. 5347
/gene="murE"
/locumber="6.3.2.13"
/RC_number="6.3.2.13"
/note="Residues 1 to 495 of 495 are 99 pct identical to residues 1 to 495 of a 495 as protein from Escherichia coli pir: S46595"
/codon_start=1
                                                                                                                                                                                                                                     t
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     /locus_tag="SF0083"
/note="Residues 1 to 452 of 452 are 99 pct identical to formation in to 452 of a 452 as protein from Escherichia coli K12 ref: NP_414628.1"
                                                                                                                                                                                              /iocus_tag="SF0081"
/note="Residues 1 to 588 of 588 are 99 pct identical to residues 1 to 588 as protein from Escherichia coli 0157:H7 EDL933 ref: NP_285780.1"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       /product="D-alanine:D-alanine-adding enzyme"
/protein_id="AaN41748.1"
/db_xref="GI:24050289"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ALTTGDKNEFVINGEGTGGRS"
3860. .5347
/gene="murE"
                                                                                          /locus_tag="SF0081"
2107. .3873
/gene="ftsI"
                                                                                                                                                                                                                                                                                                                                                                     /transl_table=11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               /transl_table=11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         /transl_table=11
                                                                                                                                                                                                                                                                                                                                      /codon_start=1
                               2107. .3873
/gene="ftsI"
```

gene

CDS

gene

CDS

```
/product="meso-diaminopimelate-adding enzyme"
/product="meso-diaminopimelate-adding enzyme"
/product="meso-diaminopimelate-adding enzyme"
/product="meso-diaminopimelate"
/db_xref="G1:12512788" 1"
/db_xref="G1:12512788" 1"
/db_xref="G1:12512788" 1"
/db_xref="G1:12512788" 1"
/db_xref="G1:12512788"
/db_xref="G1:12512788"
/db_xref="G1:12512788"
/db_xref="G1:12512788"
/db_xref="G1:12512788"
/db_yref="G1:12512788"
/db_yref="G1:12512788"
/db_yref="G1:12512788"
/db_yref="G1:12512788"
/db_yref="G1:12512788"
/db_yref="G1:12512788"
/db_yref="G1:12512788"
/db_yref="G1:12512788"
/db_yref="G1:1251278"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       LREESRRYYPSGEVTAHLIGFTNUDSOGIEGVEKSFDKWLTGQPGERIVRKDRYGRVI
EDISSTDSQAAHNLALSIDERLQALVYRELNNAVAFNKAESGSAVLVDVNTGEVLAMA
NSPSYNPNNILSGTPKEAMRNRTITDYFEPGSTVRWYWTALQRGVYRENSYLNITDY
RIGHEIKDVARYSELUTLOVLQKSSNVGVSKLALAMPSSALVDTYSRFGLGKATNLG
LVGRRSGLYPDQQRRYSDIERAFFSFGYGLMYTPLQLARYYMIGSYGIYRPLGSTTKVD
PPVPGERVFPESIVRTVVHMMESVALLPGGGCVKAAIKGYRIAKTGTAKKVGPDGRYI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Vnote="Residues 1 to 495 of 495 are 98.98 pct identical to residues 1 to 495 of 495 from Escherichia coli K-12 Strain MG1655: B0085"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        /translation="misrytealskvkgsmgsherhalpgvigddlergklplclfi
Ciiltavivyttahhtrlltaqreqlvlerdaldiewrnlileenalgdhsrveriat
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          /translation-"MKAAAKYQKPKRQEEHANFISWRFALLCGCILLALAFLLGRVAW
LQVISPDMLVKEGDMRSLRVQQVSTSRGMITDRSGRPLAVSVPVKAIWADPKEVHDAG
GISVGDRWKALANALNIPLDQLSARINANPKGRFIYLARQVNPDMADYIKKLKLPGIH
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        NKYIAYTAGVAPASQPRFALVVVINDPQAGKYYGGAVSAPVFGAIMGGVLRTMNIEPD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           /product="septum formation; penicillin-binding protein 3; peptidoglycan synthetase" /protein_id="AAG54388.1" /db_xref="G1:12512787"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               /function="enzyme; Cell division"
//note="Residues 1 to 588 of 588 are 100.00 pct identical to residues 1 to 588 of 588 from Escherichia coli K-12 strain MG1655: B0084"
                                                                                                                                                                                                                                             /function="phenotype; Cell division"
/note="Residues 1 to 121 of 121 are 100.00 pct identics
to residues 1 to 121 of 121 from Escherichia coli K-12
strain MG1655: B0083"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       /product-"cell division protein; ingrowth of wall
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     /function="enzyme; Cell envelop: Murein sacculus,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             /protein_id="AAG54387.1"
/db_xref="GI:12512786"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ALTTGDKNEFVINGEGGRS"
5210. 6697
/gene="murE"
/note="synonym: 20095"
5210. 6697
/gene="murE"
                                                            /note="synonym: 20093"
3076. .3441
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       /note="synonym: 20094"
3457. .5223
/gene="ftsI"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           /note="synonym: 20096"
6694, 8052
/gene="murF"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              EKLQMQHVDPSQENIVVQK"
3457. .5223
/gene="fts1"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              /codon_start=1
/transl_table=11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          /transl_table=11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                /transl_table=11
                                                                                                                                                                                                                                                                                                                                                                                                                                                       /codon_start=1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   peptidoglycan"
          3076. .3441
/gene="ftsL"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          6694. .8052
/gene="murF"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     gene
                    gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         gene
                                                                                                                                                            CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          /protein_id="aag54384.1"
/db_xref="GI:12512783"
/db_xref="GI:1251278
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            GADQDDAEMLAEELRKFPAETVLYLGALPELSYSFLREQGFRTAWKDDPREVHFLYAN
SYEREAAAQLFEKWLETHPWPQALFTTSFALLQGVMDVTLRRDGKLPSDLAIATFGDN
ELLDFLQCPVLAVAQRHRDVAERVLEIVLASLDEPRKPKPGLTRIKRNLYRRGVLSRS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           /function="orf; Unknown function"
//funct="Residues 1 to 152 of 152 are 99.34 pct identical to residues 1 to 152 of 152 from Escherichia coli K-12 Strain MG1655: BO081.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         /translation="MPRGATLVNLDSKGRLSVPTRYREQLLENAAGGMYCTIDIHHPC
LLLYPLPEWELIEGKLSRLSSMNPVERRVQRLLLGHASECQMDGAGRLLLAPVLRQHA
GLTKEVMLVGQFNKFELWDETTWHQQVKEDIDAEQLATGDLSERLQDLSL"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   /translation-"MMENYKHTVLLDEAVNGLNIRPDGIYIDGTFGRGGHSRLILSQ
LGEEGRLLAIDRDPQALAVAKTIDDPRFSIIHGPFSALGEYVAERDLIGKIDGILLDD
GVSSPQLDGARGFSFWRDGPLDMRMDPTRGQSAÆWLGAERADIAWYLKTYGERF
AKRIARAIUVENREQPHTRIAEVARATPVRAKFKHPATRTFQAVRIWVNSELEE
IEQALKSSLWYLAPGGRLSIISFHSLEDRIYKRFWRENSRGPQVPAGLPWTEEQLKKL
GGRQLRALGKLMPGEEEVAENPRARSSVLRIABFRNA"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      /function="regulator; Energy metabolism, carbon:
Glycolysis"
//ote="residues 1 to 334 of 334 are 100.00 pct identical
to residues 1 to 334 of 334 from Escherichia coli K-12
Strain MG1655: B0080"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               /function="orf; Not classified"
//note="Residues 1 to 313 of 313 are 100.00 pct identical
to residues 1 to 313 of 313 from Escherichia coli K-12
Strain MG1655: B0082"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    /product="transcriptional repressor of fru operon and others"
Apodaca,J., Anantharaman,T.S., Lin,J., Yen,G., Schwartz,D.C., Welch,R.A. and Blattner,F.R.
Direct Submitssion
Submitted (22-02-2000) Laboratory of Genetics, University of Wisconsin, 445 Henry Mall, Madison, WI 53706, USA
                                                                                                                                                                                                                                                                                                     1. .12791
/organism="Escherichia_coli 0157:H7 EDL933"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                /product="orf, hypothetical protein"
/protein_id="AAG54385.1"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               /product="putative apolipoprotein"
/protein_id="AAG54386.1"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                /note="enterohemorrhagic"
72. .1076
                                                                                                                                                                                                                                                                                                                                                                                           /mol_type="genomic DNA" /strain="EDL933"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           /serotype="0157:H7"
/db_xref="taxon:155864"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             /note-"synonym: 20090"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          /note="synonym: 20091"
1678. .2136
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       /note="synonym: Z0092"
2138. .3079
/gene="yabC"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           /db_xref="GI:12512784"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               /db_xref="GI:12512785"
                                                                                                                                                                                                                                                  Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         /codon_start=1/trans1_table=11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        /transl_table=11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       /transl_table=11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     /codon_start=1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         /codon_start=1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  /gene="yabB".
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           /gene="fruR"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              /gene="fruR"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                2138. .3079
/gene="yabC"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            1678. .2136
/gene="yabB"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                .1076
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1678.
                                                                                                                                                                                                                                                                                                          source
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  gene
                                                                                                                                                  JOURNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         CDS
```

```
Direct Submission.

Submitted (13-OCT-1998) Laboratory of Genetics, University of Wisconsin, 445 Henry Mall, Madison, WI 53706, USA
Wisconsin, 445 Henry Mall, Madison, WI 53706, USA
Wisconsin, 445 Henry Mall, Madison, WI 53706, USA
This sequence was determined by the E. coli Genome Project at the University of Wisconsin-Madison (Frederick R. Blattner, director). Supported by NIH grants HG00301 and HG01428 (from the Human Genome Project and WCHGR). The entire sequence was independently determined from E. coli KI2 strain MG1655. Predicted open reading frames were determined using GeneMark Software, Kindly supplied by Mark Borcdowsky, Georgia Institute of Technology, Atlanta, GA, 30332 [e-mail: mark@amber.gatech.edu]. Open reading frames that have been correlated with genetic loci are being annotated with CG Site Nos. unique ID nos. for the genes in the E. coli Genetic Stock Center (GGSC) database at Yale University, kindly supplied by Mary Berlyn. A public version of the database is accessible (http://cgsc.biology.yale.edu). Annotation of the genome is an ongoing task whose goal is to make the genome sequence more useful by correlating it with other data. Comments to the authors are appreciated. Updated information will be available at the E. coli Genome Project's World Wide Web site (http://www.genetics.wisc.edu). *** The E. coli KI2 sequence and its annotations are periodically updated; this is version M54. No sequence changes. Annotational assignments courtesy of Monica Riley; added promoters, protein binding sites, and repeated sequences described in reference I. The unique numeric identifiers beginning with a lowercase "b' assignment coden protein or Banes and products; all new functional assignments contessed of labels. This should allow them to be searched for in Entrez as gene panes.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         /function="leader; Amino acid biosynthesis: Leucine" /note="f28; 100 pct identical to LPL_ECOLI SW: P09149"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               460. 474
/note="central position to predicted promoter: -28.5"
/bound_moiety="Lrp predicted site"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       complement(201. .221)
/note="No predicted promoter"
/bound_molety="Lexa predicted site"
/note="nonlement(201. .221)
/note="central position to predicted promoter: -0.5"
/bound_molety="Lexa predicted site"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   /note="central position to leuABCD promoter: -156.5"
/hound_molety="Lrp documented site"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                462, .490
/note="factor Sigma70; predicted +1 start at 84042"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  complement(197. .226)
/note="factor Sigma70; promoter leu; documented +1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  /codon_start=1
/transl_table=11
/product="leu opernon leader peptide"
/protein_id="AAC73186.1"
/db_xref="G1:1786263"
/translation="MTHIVRFIGLLLINASSLRGRRVSGIQH"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          /bound_moiety="Lrp documented site"
complement(354. .368)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1. .21757
/organism="Escherichia coli K12"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              complement(354. .368)
/note="No predicted promoter"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                /mol_type="genomic DNA" /strain="K12"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 /note="synonym: b0075" complement(77. .163)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               /sub_strain="MG1655"
/db_xref="taxon:83333"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      complement(519. 537)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        complement(77. .163)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       /gene="leuL"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                /gene="leuL"
                                                           Direct Submission
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 at83735"
                                  Plunkett, G. III
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              protein_bind
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      protein_bind
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 protein_bind
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         protein_bind
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               protein_bind
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         protein_bind
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            promoter
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             promoter
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              source
REFERENCE
AUTHORS
TITLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              gene
                                                                                           JOURNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              FEATURES
                                                                                                                                                       COMMENT
                                                                                                                                                                                                                                                                                                                                                                                                                      ADNNDWLNWGSVIGSRKVWRESPNAANSDETATNIHVTSHGTEFTLQTPTGSVDVLLP
LPGRHNIANALAAALSWSVGATLDAIKAGLANLKAYPGRLEPIQLAENQLLLDDSYN
LANGSWTAAVQVLEARPGYRVLVGDWAELGAESEACHVQVGEAAKAAGIDRVLSVGK
GSHAISTASCVGEHPAEKTALITRLKSLIAEQQVITTILVKGSRSAAMEEVVRALQENG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 AE000118 21757 bp DNA linear BCT 01-DEC-2000 Escherichia coll K12 MG1655 section 8 of 400 of the complete
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Bacteria; Proteobacteria; Gammaproteobacteria; Enterobacteriales;
Enterobacteriacea; Escherichia.
1 (bases 1 to 21757)
Blattner, F.R., Plunkett, G. III, Bloch, C.A., Perna, N.T., Burland, V.,
Riley, M., Collado-Vides, J., Glasner, J.D., Rode, C.K., Maybew, G.F.,
Gregor, J., Davis, N.W., Kirkpatrick, H.A., Goeden, M.A., Rose, D.J.,
Mau, B. and Shao, Y.
                               peptidoglycan"
//note="Residues 1 to 452 of 452 are 99.33 pct identical to residues 1 to 452 of 452 from Escherichia coli K-12 Strain MG1655: B0086
                                                                                                                                                                                                                                         /protein_id="AAG54390.1"
/db_xref="G1:12512789"
/translation="MISVTLSQLTDIINGELQGADITLDAVTTDTRKLTPGCLFVALK
                                                                                                                                                                                                                                                                                                                                 GERFDAHDFADQAKAGGAGALLVSRPLDIDLPQLIVKDTRLAFGELAAWVRQOVPARV
VALTGSSGKTSVKEWTAAILSQCGNTLYTAGNLNNDIGVPWTLLRLTPEYDYAVIELG
ANHQGEIVWTVSLTRPEAALVNNLAAAHLEGFGSLAGVAKAKGEIFSGLPENGIAIMN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       /note="Residues 1 to 360 of 360 are 99.72 pct identical to residues 1 to 360 of 360 from Escherichia coli K-12 Strain
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Direct Submission
Submitted (02-SEP-1997) Guy Plunkett III, Laboratory of Genetics,
University of Wisconsin, 445 Henry Mall, Madison, WI 53706, USA.
Email: ecoli@genetics.wisc.edu Phone: 608-262-2534 Fax:
608-263-7459
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Submitted (16-JAN-1997) Guy Plunkett III, Laboratory of Genetics, University of Wisconsin, 445 Henry Mall, Madison, WI 53706, USA. Email: ecoli@genetics.wisc.edu Phone: 608-262-2534 Fax:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              'function="enzyme; Cell envelop: Murein sacculus,
   'function="enzyme; Cell envelop: Murein sacculus,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          The complete genome sequence of Escherichia coli K-12 Science 277 (5331), 1453-1474 (1997)
                                                                                                                                                                                   /trans1_table=11
/product="D-alanine:D-alanine-adding enzyme"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Score 24; DB 1; Length 12791; Pred. No. 3.7;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               0; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Query Match 1.7%; Score 24; DB Best Local Similarity 100.0%; Pred. No. 3.7 Matches 24; Conservative 0; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                /note="synonym: Z0097"
8046. 9128
/gene="mray"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    9605 CIGICGAGCTICCAGCIGGAAACC 9628
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       537 CTGTCGAGCTTCCAGCTGGAAACC 560
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              peptidoglycan'
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   AE000118 U00096
AE000118,1 GI:1786262
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       8046. .9128
/gene="mraY"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     (bases 1 to 21757)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  (bases 1 to 21757)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Escherichia coli K12
Escherichia coli K12
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Blattner, F.R.
Direct Submission
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Blattner, F.R.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   608-263-7459
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         97426617
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   9278503
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  SOURCE
ORGANISM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             DEFINITION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        AUTHORS
TITLE
JOURNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               AUTHORS
TITLE
JOURNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       TITLE
JOURNAL
MEDLINE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ACCESSION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        RESULT 9
AE000118
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         VERSION
KEYWORDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   AUTHORS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   PUBMED
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     REFERENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         REFERENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  REFERENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   CDS
```

ò g

CDS

```
FPATHRQALGMLGMHGTYEANWTMHNADVIFAVGVRFDDRTTNNLAKYCPNATVLHID
IDPTSISKTVTADIPIVGDARQVLEQMLELLSQESAHQPLDEIRDWWQQIEQWRARQC
LKYDTHSEKIKPQAVIETLWRLTKGDAYVTSDVGQHQMFAALYYPFDKPRRINSGGL
                                                                        PAT 15-AUG-2001
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ö
                                                                                                                                                                                                                                                   /note="factor Sigma70; promoter ilvIHp1; documented+1 at 85597"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Escherichia coli
Escherichia coli
Bacteria; Proteobacteria; Gammaproteobacteria; Enterobacteriales;
Enterobacteriaceae; Escherichia.
                                                                                                                                                   /note-"central position to predicted promoter:156.5"
/bound_moiety="Lrp predicted site"
2017. .2045
/gene-"ilvi"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Antisense antibacterial cell division composition and method Patent: WO 0149775-A 2 12-JUL-2001, Avi Biopharma, Inc. (US) Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                        Score 24; DB 1; Length 21757;
Pred. No. 3.4;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 1.7%; Score 24; DB 6; Length 28277; 100.0%; Pred. No. 3.2; 0; Mismatches 0; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    linear
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      DNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                 1. .28277
/organism="Escherichia coli"
/mol_type="genomic DNA"
/db_xref="taxon:562"
1 6725 c 7993 g 6845 t
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                AX191720 28277 bp
Sequence 2 from Patent W00149775.
AX191720 GI:15209889
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                14016 CTGTCGAGCTTCCAGCTGGAAACC 14039
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  standard; DNA; PRO; 28277 BP.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              14091 CTGTCGAGCTTCCAGCTGGAAACC 14114
                                                                                                                                                                                                                                                                                                                                                   /note="synonym: b0078"
3812, 4303
/gene="ilvH"
/EC_number="4.1.3.18"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         537 CTGTCGAGCTTCCAGCTGGAAACC 560
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       537 CTGTCGAGCTTCCAGCTGGAAACC 560
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       21-FEB-1991 (Rel. 27, Created)
                                                                                                                                                                                                                                                                                                           3812. .4303
/gene="ilvH"
                                                                                                                                               1998. .2012
/gene="ilvI"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Best Local Similarity 100.
Matches 24; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Best Local Similarity 100.
Matches 24; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Iversen, P. L.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            6714 a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          X55034; M10429;
                                                                                                                                             protein_bind
                                                                                                                                                                                                                                                                                                                                                                                                                                                            Query Match
                                                                                                                                                                                                                                promoter
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 X55034.1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              VERSION
KEYWORDS
SOURCE
ORGANISM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  EC2MIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    LOCUS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          BASE COUNT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            TITLE
JOURNAL
                                                                                                                                                                                                                                                                                                                 gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           RESULT 10
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ACCESSION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     REFERENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        AUTHORS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           RESULT 11
                                                                                                                                                                                                                                                                                                                                                                           CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              AX191720
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          FEATURES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ORIGIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          SXXX
                                                                                                                                                                                                                                                                                                                                                                                                                                                 /translation="WTHSTAMDSVEIRTRIEWESEFYSFCFFLFYMHDKSYSSGLFLC
IPIRERELSVTVELSMPEVQTDHPETAELSKPQLRMVDLNLLTVFDAVMQEQNITRAA
HVGMSQPAVSNAVAELKVMFNDELEVRYGRGIOPTRAFOLEGSVRQALQLVONELP
GSGFEPASSERVFHLCVGSPLDSILTSQIYNHIEQIAPNIHVMFKSSLNQNTEHQLRY
QETEFYLSYEDFHREFTSVPLFKDEWVLVASKNHFPIKGPLLKHDYVNEQHAAVSLD
RFASFSQPWYDTVDKQASIAYQGMAMMSVLSVVSQTHLVAIAPRWLAEEFAESLELQV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       /translation-"MPMSLAANCLSKIGRLMCFTHFFRQTVRQAMEMLSGAEMVVRSL
INDGVKQVGVGCYGGAVLDIYDALHYGGGIDHVLWHEDAANHAADGLARATGEVGVVL
VTSGPGATRAITGTATAMDSIPLVVLSGQVATSLIGYDAFOBCDMVGISRPVKHSF
LVKQTEDIPQVLKKAFWLAASGRPGEVVVDLPKDILNPANKLFYVWPESVSMPSYNFS
                                                                                                                                                                                                                                                                      24
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     1949. 1963
/note-central position to predicted promoter:107.5"
/bound_molety="Lrp predicted site"
1955. 1984
/note="factor Sigma70; promoter ilvIHp2; documented+1 at
                                                                                                                                                                                                                                                                                                                                                                         /product * "probable transcriptional activator for leuABCD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            1813. 1839
*/hote-"factor Sigma70; promoter ilvIHp4; documented+1 at
85394
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  1838. 1866
/note="factor Sigma70; promoter ilvIHp3; documented+1 at
                                                                                                                                                                                                      function-"putative regulator; Amino acid biosynthesis:
                                                                                                                                                                                                                                           /note="0373; 100 pct identical to LEUO_ECOLI SW:
P10151(290 aa) but contains 59 additional N-ter aa and
C-term residues; 100 pct identical to PIR: S40589 but
contains 24 additional C-term residues"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     'function="enzyme; Amino acid biosynthesis: Isoleucine,
//note="central position to predicted promoter: -319.5"
//nound_moiety="TyrR predicted site"
554 - .565
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    /product="acetolactate synthase III, valine sensitive,
large subunit"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         /note="o604; 98 pct identical (1 gap) to 522 residues
fromILVI_ECOLI SW: P00893 (566 aa)"
/codon_start=1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   1802. .1816
/note="central position to predicted promoter: -39.5"
/bound_molety="Lrp predicted site"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           note="central position to predicted promoter: -8.5"
bound_molety="Lrp predicted site"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  /note="central position to predicted promoter:136.5"
Dound_molety="Lrp predicted site"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   'note="central position to predicted promoter:73.5"
Dound_molety="Lrp predicted site"
                                                       /note="central position to predicted promoter:64"
/bound_molety="AraC predicted site"
                                                                                                                                                                                                                                                                                                                                                                                                             /protein_id="AAC73187.1"
/db_xref="G1:1786264"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 /protein_id="AAC73188.1"
/db_xref="GI:1786265"
                                                                                                                                          'note="synonym: b0076"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    note-"synonym: b0077"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               /EC_number="4.1.3.18"
                                                                                                                                                                                                                                                                                                                                                        /transl_table=11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         /transl_table=11
                                                                                                                                                                                                                                                                                                                              /codon_start=1
                                                                                                                                                                                   /gene="leuo"
                                                                                                  646. .1767
/gene="leuo"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            .1929
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               .1992
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        1833. .1847
/note="cent:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Valine
                                      protein_bind
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              protein_bind
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    protein_bind
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              protein_bind
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          protein_bind
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 protein_bind
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              promoter
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    promoter
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     promoter
                                                                                                      gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 gene
```

CDS

a new gene

```
11142-12634
MEDLINE; 89345095.
Parquet C., Fluoret B., Menguin-Lecreulx D., Van Heljenoort J.;
"Nucleotide sequence of the murF gene encoding the UDP-MurNac- pentapeptide synthetase of Escherichla col!";
Nucleic Acids Res. 17:5379-5379(1989).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    12423-15030
MEDLINE; 90192099.
IKeda M., Wachi M., Ishino F., Matsuhashi M.;
"Nucleotide sequence involving murD and an open reading frame orf-Y spacing
murF and ftsW in Escherichia coli";
Nucleic Acids Res. 18:1058-1058(1990).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Menguin-Lecreulx D, Van Heijenoort J.;
Nuclechide sequence of the murb gene encoding the UDP-MurNac- L-Ala-D-gly
synthetase of Escherichia coli<sup>11</sup>.
Nucleic Acids Res. 18:183-183(1990).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   PUBMED; 2198024.

Michaud C., Parquet C., Flouret B., Blanot D., Van Heijenoort J.;
Michaud C., Parquet C., Flouret B., Blanot D., Van Heijenoort J.;
Revised interpretation of the sequence containing the murE gene encoding the UDP-N-acetylmuramyl-tripeptide synthetase of Escherichia coli";
Biochem. J. 269(1):277-278(1990).
                                                                                                                       MEDLINE; 90251464.
Gomez M.J., Fluoret B., Van Heljenoort J., Ayala J.A.;
"Nucleotide sequence of the regulatory region of pbpB gene of Escherichia
                                                                                                                                                                                                                                                                              Nakamura M., Maruyama I.N., Soma M., Kato J.I., Suzuki H., Hirota Y., "On the process of cellular division in Escherichia coli: nucleotide sequence of the gene for penicillin-binding protein 3."; Mol. Gen. Genet. 191(1):1-9(1983).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  MEDLINE; 90036736.
PUBMED; 2509435.
Ikeda M., Sato T., Wachi M., Jung H.K., Ishino F., Kobayashi Y.,
Matsuhashi M.;
PUBMED; 2198273.
Leclerc G., Noel G., Drapeau G.;
"Molecular clonding, nucleotide sequence and expression of shl, and the 2-minute region of the genetic map of Escherichia coli";
J. Bacteriol. 172(8):4696-4700(1990).
                                                                                                                                                                                                                                                                                                                                                                                                       Tao JS., Ishiguro E.E.; "Nucleotide sequence of the murE gene of Escherichia coli"; Can. J. Microbiol. 35(11):1051-1054(1989).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      "Structural similarity among Escherichia coli FtsW Bacillus subtils SpoVE protein, which function in elongation, and spore formation, respectively"; J. Bacteriol. 171(11):6375-6378(1989).
                                                                                                                                                                                        Nucleic Acids Res. 18:2813-2813(1990).
                                                                                                                                                                                                                                7316-10074
MEDLINE; 83296957.
PUBMED; 6350821.
                                                                                                                                                                                                                                                                                                                                                                             MEDLINE; 90124047.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      MEDLINE; 90328986.
                                                                                                                                                                                                                                                                                                                                                                                            PUBMED; 2692800.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   13392-15020
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               14743-16239
                                                                                             [9]
6088-7587
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    [15]
    ddl gene; envA gene; ftsA gene; ftsQ gene; ftsW gene; ftsZ gene; ilvH gene; ilvI gene; leuA gene; leuO gene; mraY gene; murC gene; murB gene; murE gene; orfA; orfB; orfC; orfX; pbpB gene; secA gene; shl gene.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Squires C.H., DeFelice M., Devereux J., Calvo J.M.; "Molecular structure of ilvIH and its evolutionary relationship to ilvG in
                                                                                                                                                                                                                                                            Submitted (08-JAN-1991) to the EMBL/GenBank/DDBJ databases.
Ayala J.A., Instituto de Biologia Molecular, Centro de Biologia Molecular,
Universidad Autonoma, Canto-Blanco 28049, Madrid, Spain.
                                                                                                                                                                                                                                                                                                                                                             of
                                                                                                                                                                                                                                                                                                                                                                                                                                                 MEDLINE; 82078077.
PUBMED: 6171647.
Wessler S.R., Carlo J.M.;
"Control of leu operon expression in Escherichia coli by a transcription attenuation mechanism";
J. Mol. Biol. 149(4):579-597(1981).
                                                                                                                                                                                                                                                                                                                                        Ayala J.A.; "Regulation of transcription at the 2-minute region of the genetic map Escherichia coli.";
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         MEDLINE; 86223773.

PUBMED: 3519576.

Haughn G.W., Wessler S.R., Gemmill R.M., Calvo J.M.;

High A + T content conserved in DNA sequences upstream of leuABCD in Escherichia coli and Salmonella typhimurium";

J. Bacteriol. 166(3):1113-1117(1986).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            MEDLINE; 85234358.
PUBMED: 3891724.
Bughn G.W., Squires C.H., DeFelice M., Largo C.T., Calvo J.M.;
"Unusual organization of the 11vIH promoter of Escherichia coli";
J. Bacteriol. 163(1):186-198(1985).
                                                                                                                                                        Bacteria; Proteobacteria; Gammaproteobacteria; Enterobacteriales;
Enterobacteriaceae; Escherichia.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        PUBMED; 3413113.

Henikoff S., Haughn G.W., Calvo J.M., Wallace J.C.;
*A large family of bacterial activator proteins";
Proc. Natl. Acad. Sci. U.S.A. 85(18):6602-6606(1988).
 60, Last updated, Version 31)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Nucleic Acids Res. 11(15):5299-5313(1983).
                              coli 2 minute region
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         MEDLINE; 83272971.
PUBMED; 6308579.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      843-1812
MEDLINE; 88320486.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Escherichia coli";
05-JUL-1999 (Rel.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    4274-6093
MEDLINE; 90330585.
                                                                                                                                       Escherichia coli
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 PUBMED; 3413113
                                                                                                                                                                                                   [1]
1-28277
Ayala J.A.;
                                                                                                                                                                                                                                                                                                                                                                                         Unpublished
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 1799-2187
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 [4]
268-1130
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             2101-4431
                                                                                                                                                                                                                                                                                                                                                                                                                       [3]
1-306
```

and RodA proteins ar cell division, cell

```
Lee,N.L., Gielow,W.O. and Wallace,R.G. Mechanism of arac autoregulation and the domains of two overlapping promoters, Pc and PBAD, in the L-arabinose regulatory region of Escherichia coli
Proc. Natl. Acad. Sci. U.S.A. 78 (2), 752-756 (1981)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Miyada,C.G., Horwitz,A.H., Cass,L.G., Timko,J. and Wilcox,G. Man sequence of the araC regulatory gene from Escherichia coll B/r Nucleic Acids Res. 8 (22), 5267-5274 (1980) 81124262
ftsA; dlvA; ftsZ; sflB; sulB; lpxC; envA; asmB; yacA; secA; prlD;
azl; pea; mutT; yacG; htgA; htpY; yaaI; nhaR; antO; calF; flxB;
yaaU; yabO.
                                                                                                                                                   Bacteria; Proteobacteria; Gammaproteobacteria; Enterobacteriales;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Ogden,S., Haggerty,D., Stoner,C.M., Kolodrubetz,D. and Schleif,R. The Escherichia coli L-arabinose operon: binding sites of the regulatory proteins and a mechanism of positive and negative regulation
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    for dihydrofolate
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            coli, and its two
                                                                                                                                                                                                                                                                                                                                                                Smith, B.R. and Schleif, R.
Nucleotide sequence of the L-arabinose regulatory region of
Escherichia coli K12
J. Biol. Chem. 253 (19), 6931-6933 (1978)
79005683
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 B/r
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Katinka,M., Cossart,P., Sibilli,L., Saint-Girons,I., Chalvignac,M.A., Le Bras,G., Cohen,G.N. and Yaniv,M. Nucleotide sequence of the thrA gene of Escherichia coll Proc. Natl. Acad. Sci. U.S.A. 77 (10), 5730-5733 (1980) 81077247
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             DNA sequence of the arabab promoter in Escherichia coli
Proc. Natl. Acad. Sci. U.S.A. 75 (10), 4724-4728 (1978)
79116194
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Proc. Natl. Acad. Sci. U.S.A. 77 (6), 3346-3350 (1980)
81013881
                                                                                                                                                                                                                  Ohtsubo, H. and Ohtsubo, E. Nucleotide sequence of an insertion element, IS1 Proc. Natl. Acad. Sci. U.S.A. 75 (2), 615-619 (1978) 78137003
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Cossart, P., Katinka, M. and Yaniv, M. Nucleotide sequence of the thrB gene of E. coli, adjacent regions; the thrAB and thrBC junctions Nucleic Acids Res. 9 (2), 339-347 (1981)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Smith, D.R. and Calvo, J.M.
Nucleotide sequence of the E coli gene coding reductase
Mucleic Acids Res. 8 (10), 2255-2274 (1980)
81053692
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           DNA sequence of the transposable element IS1
MO1. Gen. Genet. 169 (2), 213-218 (1979)
79177885
375010
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Greenfield, L., Boone, T. and Wilcox, G.
                                                                                                                                                                            Interobacteriaceae; Escherichia
                                                                                                    Escherichia coli
Escherichia coli
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Johnsrud, L.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              6159575
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          6251457
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               003595
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        7008027
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           6259626
                                                                                                                                                                                                                                                                                                                        273224
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        357433
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  368797
                                                                                                    SOURCE
ORGANISM
                                                                                                                                                                                                                         AUTHORS
TITLE
                                                                                                                                                                                                                                                                      JOURNAL
MEDLINE
                                                                                                                                                                                                                                                                                                                                                                     AUTHORS
TITLE
                                                                                                                                                                                                                                                                                                                                                                                                                                      JOURNAL
MEDLINE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            REFERENCE
AUTHORS
TITLE
JOURNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            JOURNAL
MEDLINE
PUBMED
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           AUTHORS
TITLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           AUTHORS
TITLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              REFERENCE
AUTHORS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             TITLE
JOURNAL
MEDLINE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   PUBMED
REFERENCE
AUTHORS
TITLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  REFERENCE
AUTHORS
TITLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    TITLE
JOURNAL
                                                                                                                                                                                                   REFERENCE
                                                                                                                                                                                                                                                                                                                      PUBMED
                                                                                                                                                                                                                                                                                                                                                 REFERENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           PUBMED
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  PUBMED
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             REFERENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 AUTHORS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     REFERENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               JOURNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        MEDLINE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              PUBMED
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          REFERENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          JOURNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            PUBMED
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   MEDLINE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               PUBMED
REFERENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         AUTHORS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         JOURNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     MEDLINE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              PUBMED
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       JOURNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     TITLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ECO110K

ECO110K

DNA 11near BCT 29-MAY-2002

BScherichla coli genomic DNA. (0.0 - 2.4 min).

N D10483 J01597 J01683 J01706 K01299 K01990 M10420 M10611 M12544

V00259 X04711 X54847 X54945 X55034 X56742

D10483.2 GI:21221891

COMPlete and shotgun sequencing; thrA; thrAl; thrA2; thrB; thrC; yaaA; yaaA; yaaA; talB; mog; chlG; dnaK; dnaJ; grop; gef; nhaA; ant; rpST; yaaC; 11eS; lspA; yaaD; lytB; yaaF; dapB; carA; pyrA; carB; yaaV; calE; calD; calC; calB; calA; calT; fixA; fixC; yaaT; yabE; yabY; kefC; trKC; folA; tmrA; apaH; apaG; pdxA; surA; imp; ostA; yabU; yabU; yabQ; hepA; polB; dlnA; araD; araA; araB; araC; yabI; yabU; yabX; tbpA; yabN; yabM; leuD; leuC; leuB; leuA; leuLP; lueO; llvI; ilvH; brnP; shI; fruR; yabB; yabC; ftsL; pbpB; ftsI; murE; murE; mra; mraY; murX; murC; murG; ddl; ddlB; ftsQ;
                                                                                                                                                                                         MEDLINE; 90326550.
Ikeda M., Wachl M., Jung H.K., Ishino F., Matsuhashi M.;
"Nucleotide sequence involving murG and murC in the mra gene cluster region
of Escherichia coli";
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        BCT 29-MAY-2002
                                                  Menguin-Lecreulx D., Texier L., Van Heijenoort J.;
"Nucleotide sequence of the cell-envelope murG gene of Escherichia coli";
Nucleic Acids Res. 18:2810-2810(1990).
                                                                                                                                                                                                                                                                                                                                                                                                                               Robinson A.C., Kenan D.J., Hatfull G.F., Sullivan N.F., Spiegelberg R., Donachie W.D.;
Donachie W.D.;
Donachie W.D.;
Donachie W.D.;
Donachie W.D.;
Donachie W.D.;
Donachie W.D.;
Sequence and transcriptional organization of essential cell division genes fixe and fixe of Escherichia coli: evidence for overlapping transcriptional units.";
J. Bacteriol. 160(2):546-555(1984).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Y1 Q.M., Lutkenhaus J.;
"The nucleotide sequence of the essential cell-division gene fts2 Bscherichia col1";
Gene 36(3):241-247(1985).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Beall B., Lutkenhaus J.;
Sequence analysis, transcriptional organization, and insertional
"Sequence sis of the envA gene of Escherichia coli";
J. Bacteriol. 169(12):5408-5415(1987).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Length 28277;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  1.7%; Score 24; DB 15;
100.0%; Pred. No. 3.2;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                MEDLINE; 88298644.
PUBNED; 2841285.
Schmidt M., Rollo E., Grodberg I., Oliver D.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Pred. No. 3.2
0; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          14091 CTGTCGAGCTTCCAGCTGGAAACC 14114
                                                                                                                                                                                                                                                                                             Nucleic Acids Res. 18:4014-4014(1990).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              537 CTGTCGAGCTTCCAGCTGGAAACC 560
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        100.08;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Best Local Similarity 100.
Matches 24; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     22964-25011
MEDLINE; 88058745.
PUBMED; 2824434.
                                                                                                                                                                                                                                                                                                                                                                                       MEDLINE; 85054557.
PUBMED; 6094474.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   MEDLINE; 86083166.
PUBMED; 3000876.
                                                                                                                                                                                                                                                                                                                                                                19464-21952
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             21464-23333
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               23989-27799
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       DEFINITION
ACCESSION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    RESULT 12
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              VERSION
KEYWORDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ECO110K
```

ð a

```
248308 bp DNA linear HTG 15-MAY-2002 Mus musculus clone RP23-439M3 strain C57BL6/J, WORKING DRAFT AC073937
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Structure of the DNA distal to the gene for ribosomal protein S20 in Escherichia coli K12: presence of a strong terminator and an IS1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     DNA and amino-acid sequences of 3-isopropylmalate dehydrogenase of
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Buteleostomi; Mammalia; Butheria; Rodentia; Sciurognathi; Muridae; Murinae; Mus. 1 (Dases I to 248308)
Montgomery, K.T., Grills, G., Han, J., Lee, E., Long, J., Pomerantz, R., Ioshikhes, I.P., Shim, C., Decker, J., Thomas, E., Perera, A., Gordon, M., Goltz, J.S. and Kucherlapati, R.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    [ (bases 1 to 248308)
Montgomery, K.T., Grills, G., Han, J., Lee, E., Long, J., Pomerantz, R.,
Moshikhes, I.P., Shim, C., Decker, J., Thomas, E., Perera, A.,
Gordon, M., Goltz, J.S., Liedtke, W., Friedman, J.M. and
Kucherlapati, R.
                            and Gross,C.A.
Consensus sequence for Escherichia coli heat shock gene promoters
Proc. Natl. Acad. Sci. U.S.A. 82 (9), 2679-2683 (1985)
                                                                                                                                                                                                                                                                                                                                                                                                                                            Sekiguchi, T., Ortega-Cesena, J., Nosoh, Y., Ohashi, S., Tsuda, K. and
                                                                                                                            Cnong,P., Hui,I., Loo,T. and Gillam,S.
Structural analysis of a new GC-specific insertion element IS186
FEBS Lett. 192 (1), 47-52 (1985)
86030702
                   Cowing, D.W., Bardwell, J.C., Craig, E.A., Woolford, C., Hendrix, R.W.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Bacillus coagulans. Comparison with the enzymes of Saccharomyces cerevisiae and Thermus thermophilus
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Gaps
                                                                                                                                                                                                                                                                                         Birnbaum, M.J., Haspel, H.C. and Rosen, O.M. Cloning and characterization of a cDNA encoding the rat brain glucose-transporter protein
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Obki,M., Tamura,F., Nishimura,S. and Uchida,H.
Nucleotide sequence of the Escherichia coli dnaJ gene and
Purification of the gene product
J. Biol. Chem. 261 (4), 1778-1781 (1986)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ö
                                                                                                                                                                                                                                                                                                                                       Proc. Natl. Acad. Sci. U.S.A. 83 (16), 5784-5788 (1986)
86287338
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Length 111408;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           0; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Nucleic Acids Res. 14 (17), 6965-6981 (1986)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Biochim. Biophys. Acta 867, 36-44 (1986)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Score 24; DB 1;
Pred. No. 2.6;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Query Match. 1.7%; Score 24; DB Best Local Similarity 100.0%; Pred. No. 2.6 Matches 24; Conservative 0; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         97222 CTGTCGAGCTTCCAGCTGGAAACC 97245
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   537 CTGTCGAGCTTCCAGCTGGAAACC 560
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     HTG; HTGS_PHASE1; HTGS_DRAFT.
Mus musculus (house mouse) .
Mus musculus
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 AC073937.14 GI:14269588
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Unpublished
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Mackie, G.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Kanaya, S.
                                                                                                                                                                                                                                                      2996940
                                                                                                                                                                                                                                                                                                                                                                                                      3016720
                                                                                                                          887408
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         element
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  1003084
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    DEFINITION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ORGANISM
                                                                                                      MEDLINE
PUBMED
                                                                                                                                                                                                                                                                                           AUTHORS
TITLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       RESULT 13
AC073937
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             TITLE
JOURNAL
REFERENCE
                                                                                                                                                                                     TITLE
JOURNAL
                                                                                                                                                                                                                                                                                                                                                                                                                      REFERENCE
AUTHORS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    REFERENCE
AUTHORS
REFERENCE
                     AUTHORS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       JOURNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           JOURNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ACCESSION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 VERSION
KEYWORDS
SOURCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              REFERENCE
                                                                                JOURNAL
                                                                                                                                                                   AUTHORS
                                                                                                                                                                                                                                MEDLINE
                                                                                                                                                                                                                                                    PUBMED
                                                                                                                                                                                                                                                                          REFERENCE
                                                                                                                                                                                                                                                                                                                                                         JOURNAL
                                                                                                                                                                                                                                                                                                                                                                                 MEDLINE
                                                                                                                                                                                                                                                                                                                                                                                                      PUBMED
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            AUTHORS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  AUTHORS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              AUTHORS
                                                                                                                                             REFERENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       JOURNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  PUBMED
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     TITLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               TITLE
                                                             TITLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             TITLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   LOCUS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Innis,M.A., Tokunaga,M., Williams,M.E., Loranger,J.M., Chang,S.Y., Chang,S. and Wu,H.C.
Nucleotide sequence of the Escherichia coli prolipoprotein signal
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Friedberg, D., Rosenthal, E.R., Jones, J.W. and Calvo, J.M. Characterization of the 3' end of the leucine operon of Salmonella
                                                    Mackie, G.A.

Nucleotide sequence of the gene for ribosomal protein S20 and its
Miclanting regions
J. Bloi. Chem. 256 (15), 8177-8182 (1981)
81264207
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Parsot,C., Cossart,P., Saint-Girons,I. and Cohen,G.N. Nuclectide sequence of thrC and of the transcription termination region of the threonine operon in Escherichia coli K12 Nucleic Acids Res. 11 (21), 7331-7345 (1983)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Bouvier, J., Richaud, C., Richaud, F., Patte, J.C. and Stragier, P. Nucleotide sequence and expression of the Escherichia coli dapB
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Kamio,Y., Lin,C.K., Regue,M. and Wu,H.C.
Characterization of the iles-lsp operon in Escherichia coli.
Identification of an open reading frame upstream of the iles and potential proncter(s) for the iles-lsp operon
J. Biol. Chem. 260 (9), 5616-5620 (1985)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         coli
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Bouvier,J., Patte,J.C. and Stragier,P.
Multiple regulatory signals in the control region of the
Escherichia coli carAB operon
Proc. Natl. Acad. Sci. U.S.A. 81 (13), 4139-4143 (1984)
84248073
                                                                                                                                                                                                                              the
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Bardwell, J.C. and Craig, E.A.
Major heat shock gene of Drosophila and the Escherichia heat-inducible dnak gene are homologous
Proc. Natl. Acad. Sci. U.S.A. 81 (3), 848-852 (1984)
84144800
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            peptidase (1sp) gene
Proc. Natl. Acad. Sci. U.S.A. 81 (12), 3708-3712 (1984)
84222028
                                                                                                                                                                                                Stoner, C.M. and Schleif, R.

Is the amino acid but not the nucleotide sequence of tescherichia coli arac gene conserved?

J. Mol. Biol. 154 (4), 649-652 (1982)

82216830
                                                                                                                                                                                                                                                                                                                                         Gilson, E., Nikaido, H. and Hofnung, M.
Sequence of the malk gene in E.coli K12
Nucleic Acids Res. 10 (22), 7449-7458 (1982)
83116968
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       J. Biol. Chem. 259 (23), 14829-14834 (1984)
85054974
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Mol. Gen. Genet. 199 (3), 486-494 (1985)
85295470
2993799
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              typhimurium
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    84069770
6316258
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               J. Biol.
85182715
               6262769
                                                                                                                                                               6267039
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         6374664
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       6377309
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     5094578
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         985604
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   PUBMED
REFERENCE
AUTHORS
                                                                                                                                                                            REFERENCE
AUTHORS
TITLE
                                                                                                                                                                                                                                                                                       MEDLINE
PUBMED
REFERENCE
                                                                                                                                                                                                                                                                                                                                                    AUTHORS
TITLE
JOURNAL
MEDLINE
                                                                                                                                                                                                                                                                                                                                                                                                                                       PUBMED
REFERENCE
AUTHORS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              JOURNAL
MEDLINE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             REFERENCE
AUTHORS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        REFERENCE
AUTHORS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           JOURNAL
MEDLINE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             JOURNAL
MEDLINE
PUBMED
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          REFERENCE
AUTHORS
TITLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 MEDLINE
PUBMED
                                     REFERENCE
                                                        AUTHORS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            JOURNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             JOURNAL
                                                                                                                                                                                                                                                                   JOURNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           REFERENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             AUTHORS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            JOURNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       REFERENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            AUTHORS
                                                                                                                     JOURNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          PUBMED
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        PUBMED
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                JOURNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       PUBMED
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     PUBMED
                                                                            TITLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    TITLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     TITLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      TITLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  TITLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  TITLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                TITLE
```

TITLE JOURNAL

COMMENT

```
unknown length
of 1613 bp in length
unknown length
                                                         unknown length
of 1389 bp in length
                                                                                     known length
1372 bp in length
                                                                                                                                                                     unknown length
of 1339 bp in length
                                                                                                                                                                                                                                                                                                                         of 1207 bp in length
unknown length
                                                                                                                                                                                                                                                                                                                                                                   unknown length
of 1084 bp in length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  unknown length
of 1013 bp in length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     unknown length
of 1650 bp in length
                                                                                                                              of 1072 bp in length
                                                                                                                                                          of 1411 bp in length
                                                                                                                                                                                                              1075 bp in length
                                                                                                                                                                                                                                                                                                                                                                                                            of 1464 bp in length
                                                                                                                                                                                                                                                                                                                                                                                                                                         of 1281 bp in length
unknown length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                     p in length
length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               gap of unknown length contig of 566 bp in length.
                 751 bp in length
                                            612 bp in length
                                                                                                                                                                                                                                          in length
                                                                                                                                                                                                                                                                      843 bp in length
                                                                                                                                                                                                                                                                                                                                                       558 bp in length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           933 bp in length
                                                       length
                                                                                                                unknown length
                                                                                                                                            unknown length
                                                                                                                                                                                                    length
                                                                                                                                                                                                                             unknown length
                                                                                                                                                                                                                                                                                                                                                                                                unknown length
                                                                                                                                                                                                                                                                                                                                                                                                                            unknown length
                             length
                                                                                                                                                                                                                                                         length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            unknown length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             134435. 149784
/note="assembly_name:Contig200"
149805. 158841
/note="assembly_name:Contig199"
158862 .166440
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   166461. .176603
/note="assembly_name:Contig197"
176624. .185346
/note="assembly_name:Contig196"
185367. .192080
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       note="assembly_name:Contig204"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   45452. .90348
/note="assembly_name:Cont1g203"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             90369. .119208
/note="assembly_name:Contig202"
119229. .134414
/note="assembly_name:Contig201
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    note-"assembly_name:Contig198"
                                                                                                                                                                                                                                            dq 806
                                                                                                                                                                                                                                                                                                                                                                                                                                                                     876 bp
                                                                                                                                                                                                                                                       unknown
of 843 bp
                                                                                                                                                                                                   unknown
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           1. .248308
/orqanism="Mus musculus"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  /mol_type="genomic DNA'
/strain="C57BL6/J"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              /db_xref="taxon:10090"
/clone="RP23-439M3"
                                                                                                                                                                                 of
                                                                                                                                                                                                              ot
                                                                                                                                                                                                                                                                                                                                                        ď
                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ot
                                                                                                     ŏ
                                                                                                                                                                                                                                             οĘ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Cocation/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              contig
gap of
contig
gap of
                contig
gap of
contig
gap of
contig
gap of
                                                                                                                                                                       gap of contig gap of contig gap of gap of contig gap of
                                                                                                                                                                                                                                                                                                                                                                                                          contig
gap of
                                                                                                                                            gap of
contig
                                                                                                                                                                                                                                                                                                                                                                                                                                                                   contig
gap of
                                                                                                                              contig
                                                                                                                                                                                                                                                                                                                                                                                                                                                        gap of
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 vector_side:left"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       clone_end: T7
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             248308:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          /sex-"male"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      .45431
                                                                       224964
226353
226373
                                                                                                                                                                                                                                                                                                               36146
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            247743
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 246412
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          misc_feature
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      misc_feature
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                misc_feature
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            misc_feature
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    misc_feature
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          misc_feature
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         misc_feature
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     misc_feature
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            misc_feature
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                misc_feature
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         source
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           FEATURES
          Submitted (07-UUL-2000) Department of Molecular Genetics, Albert Einstein College of Medicine Genome Center, 1300 Morris Park Ave., Bronx, NY 10461, USA On May 31, 2001 this sequence version replaced gi:14190542.
                                                                                                                                                               Sequencing vector: port 100%
Chemistry: Dye-terminator Big Dye; 100%
Chomistry: Dye-terminator Big Dye; 100%
*Consensus quality: 221072 at least 030
*Consensus quality: 220122 at least 040
*Consensus quality: 220122 at least 040
*Estimated insert size: agarose-FP - N/A
**Estimated insert size: 247448 - sum-of-contigs
Quality coverage: agarose-FP - N/A
Quality coverage: 7.4 x in Q20 bases; sum-of-contigs estimation
                                                                                                                                                                                                                                                                               NOTE: This is a 'working draft' sequence. It currently consists of 44 contigs. The true order of the pieces is not known and their order in this sequence record is arbitrary. Gaps between the contigs are represented as runs of N. but the exact sizes of the gaps are unknown. This record will be updated with the finished sequence as soon as it is available and the accession number will be preserved.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                           g of 18840 bp in length funknown length of 15186 bp in length g of 15180 bp in length g of 15350 bp in length funknown length g of 9037 bp in length funknown length g of 7579 bp in length
                                                                                                           Web site: http://www.hpcgg.org/Sequence/mouse.html
Contact: hpgc@mendel.mgh.harvard.edu
--------Summary Statistics
Center project name: AEX
                                                                                                                                                                                                                                                                                                                                                                                                                       45431: contig of 45431 bp in length
45451: gap of unknown length
90348: contig of 44897 bp in length
90368: gap of unknown length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      of 10143 bp in length
unknown length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               bp in length
length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        bp in length
length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 bp in length
length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1399 bp in length
known length
2068 bp in length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     bp in length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         bp in length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       bp in length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                bp in length
length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               bp in length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           length
bp in length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             1256 bp in length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   2542 bp in length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         known length
811 bp in length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            unknown length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   length
                                                                   Center: Harvard Partners Genome Center
Center Code: HPGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           unknown
of 1827
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               unknown
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       unknown
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         unknown
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       unknown
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  unknown
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    of 1974
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ď
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         οŧ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ō
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ō
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ď
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ō
                                                                                                                                                                                                                                                                                                                                                                                                                                                                              contig
gap of
contig
gap of
contig
gap of
contig
gap of
contig
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  contig
gap of
contig
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        contig
gap of
contig
gap of
contig
gap of
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           gap of
contig
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        gap of
contig
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          gap of
contig
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  gap of
contig
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           contig
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     contig
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         contig
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                gap of
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               gap of
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      gap of
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            221472:
223540:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       17491:
Direct Submission
                                                                                                                                                                                                                                                                                                                                                                                                                                      45432
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       199382
204103
204123
207076
207096
209884
209904
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ,66461
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           192081
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       199362
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           92101
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           215385
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          16641
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       216661
```

```
1048
                                                                                                                                                                                                                                                                                                                         2409
                                                                                                                                                                                                                                                                                                                                                              3422
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               8550
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    10038
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              12338
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          20282
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   22780
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          24970
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      27766
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 30639
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          33815
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      36373
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           37712
                                                                                                                                                                                                                                                                                                                                                                                                4744
                                                                                                                                                                                                                                                                                                                                                                                                                                      5784
                                                                                                                                                                                                                                                                                                                                                                                                                                                                           6807
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          11167
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 13403
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       14554
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           15649
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              17324
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    18447
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             21652
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         23829
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           29203
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       32351
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  34994
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                26601
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ACO20876 259498 bp DNA linear HTG 29-MAR-2000
Mus musculus clone RP23-336D4, WORKING DRAFT SEQUENCE, 75 unordered
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Direct Submission
Submitted (10-JAN-2000) Production Sequencing Facility, DOE Joint
Genome Institute, 2800 Mitchell Drive, Walnut Creek, CA 94598, USA
On Mar 29, 2000 this sequence version replaced gi:6686432.
-----Genome Center
Center: Joint Genome Institute
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Eukaryota, Metazoa, Chordata, Craniata, Vertebrata, Euteleostomi, Mammalia, Eutheria, Rodentia, Sciurognathi, Muridae, Murinae, Mus 1 (bases 1 to 25949)
DOE Joint Genome Institute.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Length 248308;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     0; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Web site: http://www.jgi.doe.gov
-----Summary Statistics
Consensus quality: 178059 bases at least Q40
Consensus quality: 214074 bases at least Q30
Consensus quality: 225088 bases at least Q20
       / Moce- assembly_name.contigled.
/ hote="assembly_name:Contigled"
199382. 204102
/ hote="assembly_name:Contigled"
                                                                                                                                                                                                                                                                                                                                                      16661. 227471

Inote-"assembly_name:Contig186"
217492. .220031

/note-"assembly_name:Contig186"
22004. .221452
/note-"assembly_name:Contig184"
221473. .223540
/note-"assembly_name:Contig183"
233561. .224311
/note-"assembly_name:Contig182"
/note-"assembly_name:Contig181"
22432. .224943
/note-"assembly_name:Contig181"
224364. .226352
/note-"assembly_name:Contig181"
                                                                                                                                                                                                                       vector_side:left"
21151. .213370
/note="assembly_name:Contig189"
213391. .215364
/note="assembly_name:Contig188"
215385. .216640
/note="assembly_name:Contig188"
note="assembly_name:Contig195'
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            1.7%; Score 24; DB 2;
100.0%; Pred. No. 2.3;
1ve 0; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             239530 CTGTCGAGCTTCCAGCTGGAAACC 239553
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           pieces.
AC020876.2 GI:7340302
HTG; HTGS_PHASE1; HTGS_DRAFT.
Mus musculus (house mouse)
Mus musculus
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       537 CTGTCGAGCTTCCAGCTGGAAACC 560
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         2 (bases 1 to 259498)
DOE Joint Genome Institute.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Sequencing of Mouse
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Query Match
Best Local Similarity 100.0
Matches 24; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Center Code: JGI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Unpublished
                                                                                                                                                                                                                                                                                                                                                        misc_feature
                 misc_feature
                                                       misc_feature
                                                                                                                                misc_feature
                                                                                                                                                                    misc_feature
                                                                                                                                                                                                                                               misc_feature
                                                                                                                                                                                                                                                                                   misc_feature
                                                                                                                                                                                                                                                                                                                         misc_feature
                                                                                                                                                                                                                                                                                                                                                                                                misc_feature
                                                                                                                                                                                                                                                                                                                                                                                                                                      misc_feature
                                                                                                                                                                                                                                                                                                                                                                                                                                                                         misc_feature
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             misc_feature
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    misc_feature
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        misc_feature
                                                                                             misc_feature
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                RESULT 14
AC020876/c
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      LOCUS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 VERSION
KEYWORDS
SOURCE
ORGANISM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  AUTHORS
TITLE
JOURNAL
REFERENCE
AUTHORS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ACCESSION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               TITLE
JOURNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                REFERENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        COMMENT
```

g à

```
Estimated insert size: 259498; sum-of-contigs estimation Estimated insert size: 206000; pulse field gel estimation Quality coverage: 4.28 in Q20 bases; pulse field gel estimation Quality coverage: 3.40x in Q20 bases; sum-of-contigs estimation
                                               * NOTE: This is a 'working draft' sequence. It currently consists of 75 contigs. The true order of the pieces is not known and their order in this sequence record is arbitrary. Gaps between the contigs are represented as runs of N, but the exact sizes of the gaps are unknown. This record will be updated with the finished sequence as soon as it is available and the accession number will be preserved.
                                                                                                                                                                     bp in length
length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           bp in length
length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   unknown length
of 1110 bp in length
unknown length
                                                                                                                                                    bp in length
length
                                                                                                                                                                                                                                                                                                                                     length
                                                                                                                                                                                                                                                                                                                                                                                                                                     bp in length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  bp in length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    in length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          bp in length
                                                                                                                                in length
                                                                                                                                                                                                                in length
                                                                                                                                                                                                                                  in length
                                                                                                                                                                                                                                                       in length
                                                                                                                                                                                                                                                                           bp in length
                                                                                                                                                                                                                                                                                              bp in length
                                                                                                                                                                                                                                                                                                                                                                             in length
                                                                                                                                                                                                                                                                                                                                                                                                in length
                                                                                                                                                                                                                                                                                                                                                                                                                    bp in length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                               in length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          length
                                                                                                                                                                                                     length
                                                                                                                                                                                                                                            length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                    length
                                                                                                                                                                                                                         length
                                                                                                                                                                                                                                                                 ength
                                                                                                                                                                                                                                                                                     ength
                                                                                                                                                                                                                                                                                                        ength
                                                                                                                                                                                                                                                                                                                           ength
                                                                                                                                                                                                                                                                                                                                                 ength
                                                                                                                                                                                                                                                                                                                                                                   length
                                                                                                                                                                                                                                                                                                                                                                                      Length
                                                                                                                                                                                                                                                                                                                                                                                                            ength
                                                                                                                                                                                                                                                                                                                                                                                                                              Length
                                                                                                                                                                                                                                                                                                                                                                                                                                                  ength
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ength
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ength
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ength-
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ength
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ength
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ength
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ength.
                                                                                                                                            ength
                                                                                                                                                                                                                                                                                                                   ņ
                                                                                                                                                                                                                                                                                                                                       ţ
                                                                                                                                                                                                                                                                                                                                                          ļ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       pp in
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ui aq
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              in
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ļ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         pp in
                                                                                                                                of 1047 huknown of 1361 huknown of 1013 huknown
                                                                                                                                                                                                     unknown of 1040 k
unknown of 1023 k
                                                                                                                                                                                                                                                                                                                 of 1171 |
unknown
of 1065 |
                                                                                                                                                                                                                                                                                                                                                                                                                              unknown
of 1835
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      of 1141 |
unknown
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   unknown
of 1165
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       unknown
of 1437
                                                                                                                                                                                                                                            unknown
of 1743
                                                                                                                                                                                                                                                                                                                                              unknown
of 1151
                                                                                                                                                                                                                                                                                                                                                                   unknown
of 1095
                                                                                                                                                                                                                                                                                                                                                                                                                                                  unknown
of 1370
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         contig of 1712
gap of unknown
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 of 1179
                                                                                                                                                                                            of 1322
                                                                                                                                                                                                                                                                  unknown
                                                                                                                                                                                                                                                                          of 1488
                                                                                                                                                                                                                                                                                     unknown
                                                                                                                                                                                                                                                                                              of 1129
                                                                                                                                                                                                                                                                                                         unknown
                                                                                                                                                                                                                                                                                                                                                                                        unknown
                                                                                                                                                                                                                                                                                                                                                                                                of 1675
                                                                                                                                                                                                                                                                                                                                                                                                            unknown
                                                                                                                                                                                                                                                                                                                                                                                                                    of 1123
                                                                                                                                                                                                                                                                                                                                                                                                                                                                     unknown
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                of 1128
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         unknown
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  of 1049
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            unknown
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          of 1631
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           unknown
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    of 1436
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                unknown
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            of 1464
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        unknown
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             unknown
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     oţ
                                                                                                                               1047: contig c
gap of t
2408: contig c
gap of t
                                                                                                                                                                      3421: contig

9ap of u

4743: contig

5783: contig

9ap of u

9ap of u

8549: contig

9ap of u

8549: contig

9ap of u

9ap of u
                                                                                                                                                                                                                                                                                                                                                                                                                  contig
gap of
contig
gap of
contig
gap of
contig
gap of
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     contig
gap of
gap of
contig
gap of
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               contig
gap of
contig
gap of
                                                                                                                                                                                                                                                                                                                contig
gap of
contig
gap of
contig
gap of
contig
gap of
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                contig
gap of
contig
gap of
contig
gap of
                                                                                                                                                                                                                                                                                              contig
gap of
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            contig
gap of
                                                                                                                                                                                                                                                                           10037:
                                                                                                                                                                                                                                                                                              11166:
                                                                                                                                                                                                                                                                                                                  12337:
                                                                                                                                                                                                                                                                                                                                      13402:
                                                                                                                                                                                                                                                                                                                                                        14553;
                                                                                                                                                                                                                                                                                                                                                                            15648:
                                                                                                                                                                                                                                                                                                                                                                                                17323:
                                                                                                                                                                                                                                                                                                                                                                                                                   18446:
                                                                                                                                                                                                                                                                                                                                                                                                                                      20281:
                                                                                                                                                                                                                                                                                                                                                                                                                                                           21651:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                              22779:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  23828:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      24969:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         26600:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            27765:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                29202:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    30638:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         32350:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             33814:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 34993:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     36372:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        37711:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            38821:
```

```
length
bp in length
                                                        in length
                                                                                    in length
                                                                                                  in length
                                                                                                                              in length
                                                                                                                                                                                                                                                                                                                                                                                                                                                     length
bp in length
                                                                                                                in length
                                                                                                                                           in length
                                                                                                                                                                       in length
                                                                                                                                                                                      in length
                                                                                                                                                                                                   in length
                                                                                                                                                                                                                 in length
                                                                                                                                                                                                                               in length
                                                                                                                                                                                                                                                           in length
                                                                                                                                                                                                                                                                        bp in length
                                                                                                                                                                                                                                                                                       in length
                                                                                                                                                                                                                                                                                                     in length
                                                                                                                                                                                                                                                                                                                                                                                                      bp in length
                                                                                                                                                                                                                                                                                                                                                                                                                           length
bp in length
                                                                                                                                                                                                                                                                                                                   bp in length
                                                                                                                                                                                                                                                                                                                                in length
                                                                                                                                                                                                                                                                                                                                              bp in length
                                                                                                                                                                                                                                                                                                                                                            op in length
                                                                                                                                                                                                                                                                                                                                                                         in length
                                                                                                                                                                                                                                                                                                                                                                                        bp in length
                                                                                                                                                                                                                                                                                                                                                                                                                                               bp in length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                           bp in length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    bp in length
                                                                                                                                                                                                                                                                                                           ength.
                                                                                                                                                                                                                                                                                                                        length
                     Length
                                    ength
                                                 Length
                                                                              ength
                                                                                                         ength
                                                                                                                      ength
                                                                                                                                     length
                                                                ength
                                                                                           ength.
                                                                                                                                                   Length
                                                                                                                                                                 ength
                                                                                                                                                                               ength
                                                                                                                                                                                                                                       ength
                                                                                                                                                                                                                                                    Length
                                                                                                                                                                                                                                                                  length
                                                                                                                                                                                                                                                                                 Length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               length
                                                                                                                                                                                             Length
                                                                                                                                                                                                           ength
                                                                                                                                                                                                                        ength
                                                                                                                                                                                                                                                                                                                                                     Length
                                                                                                                                                                                                                                                                                                                                                                                  ength
                                                                                                                                                                                                                                                                                                                                                                                              ength
                                                                                                                                                                                                                                                                                                                                                                                                                                         length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ength
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ength
                                                                                                                                                                                                                                                                                               ength
                                                                                                                                                                                                                                                                                                                                        Length
                                                                                                                                                                                                                                                                                                                                                                   Length
                                                                                                                                                                                                                                                                                                                                                                                  unknown
of 2685
                                                       of 1288
                                                                                                                                    unknown
                                                                                                                                                                                    of 1619
                    unknown
                                                                                           unknown
                                                                                                                     unknown
                                                                                                                                                                                                                                                                                       £ 2988
                                                                                                                                                                                                                                                                                                                                                                                               unknown
                                                                                                                                                                                                                                                                                                                                                                                                                           unknown
                                                                                                                                                                                                                                                                                                                                                                                                                                 contig of 3404
gap of unknown
                                                                                                                                                                                                                                                                                                                                                                                                                                                of 5538
                                                                                                                                                                                                                                                                                                                                                                                                                                                             of 4410
                                                                                                                                                                                                                                                                                                                                                                                                                                                                    unknown
      gap of contig                                                        contig
gap of
contig
gap of
                                                                                   contig
gap of
                                                                                                 contig
gap of
                                                                                                               contig
gap of
                                                                                                                             contig
gap of
                                                                                                                                            contig
gap of
                                                                                                                                                         contig
gap of
contig
gap of
contig
gap of
                                                                                                                                                                                                   contig
gap of
                                                                                                                                                                                                                 contig
gap of
                                                                                                                                                                                                                                     gap of
                                                                                                                                                                                                                                                   gap of
contig
gap of
                                                                                                                                                                                                                                                                               gap of
contig
gap of
                                                                                                                                                                                                                                                                                                   contig
gap of
contig
                                                                                                                                                                                                                                                                                                                                      gap of
                                                                                                                                                                                                                                                                                                                                                           contig
gap of
                                                                                                                                                                                                                                                                                                                                                                         contig
                                                                                                                                                                                                                                                                                                                                                                                                     contig
gap of
contig
                                                                                                                                                                                                                                                                                                                                                                                                                                              contig
gap of
                                                                                                                                                                                                                                                                                                                                                                                                                                                            contig
gap of
                                                                                                                                                                                                                                                                                                                                                                                                                                                                          contig
gap of
contig
gap of
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      contig
gap of contig
                                                                                                                                                                                                                               contig
                                                                                                                                                                                                                                                                        contig
                                                                                                                                                                                                                                                                                                                                contig
                                                                                                                                                                                                                                                                                                                                                     gap of
                                                                                                                                                                                                                                                                                                                                                                                                                          gap of
                                                                                                                                                                                                                                                                                                                         gap of
                                                                                                                                                                                                                                                                                                                                                                                        contig
                                                                                                                                                                                                                                                                                                                                                                                              gap of
10400:
                                                                     17013;
                                                                                                                                                                       56908:
                                                                                                                                                                                                  60093:
                                                                                                                                                                                                                61444:
                                                                                                                                                                                                                                                                        68584:
                                                                                                                                                                                                                                                                                     71572:
                                                                                                                                                                                                                                                                                                                                                                                                    93097:
                                                                                                                                                                                                                                                                                                                                                                                                                                              105084:
                           42543:
                                         13957:
                                                       15245:
                                                                                  18155;
                                                                                                 49158:
                                                                                                               50170:
                                                                                                                                          53265:
                                                                                                                                                        55279:
                                                                                                                                                                                    58527:
                                                                                                                                                                                                                              62672:
                                                                                                                                                                                                                                            65545:
                                                                                                                                                                                                                                                         67540:
                                                                                                                                                                                                                                                                                                   73312:
                                                                                                                                                                                                                                                                                                                 75668:
                                                                                                                                                                                                                                                                                                                                             80669:
                                                                                                                                                                                                                                                                                                                                                           83363:
                                                                                                                                                                                                                                                                                                                                                                         87042:
                                                                                                                                                                                                                                                                                                                                                                                      89727:
                                                                                                                                                                                                                                                                                                                                                                                                                  96142:
                                                                                                                                                                                                                                                                                                                                                                                                                                                           109494:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  136674:
             11429:
                                                                                                                             51392:
                                                                                                                                                                                                                                                                                                                               78367:
                                                                                                                                                                                                                                                                                                                                                                                                                                99546:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                          113825:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        119314:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     129224:
                                                      43958
                                                                                                                                                        53266
                                                                                                                                                                                                                                                         65546
                           41430
                                         42544
                                                                    45246
                                                                                  47014
                                                                                                 48156
                                                                                                               49159
                                                                                                                                          51393
                                                                                                                                                                       55280
                                                                                                                                                                                    56909
                                                                                                                                                                                                  58528
                                                                                                                                                                                                                               61445
                                                                                                                                                                                                                                            62673
                                                                                                                                                                                                                                                                       67541
                                                                                                                                                                                                                                                                                     68585
                                                                                                                                                                                                                                                                                                   71573
                                                                                                                                                                                                                                                                                                                 73313
                                                                                                                                                                                                                                                                                                                               75669
                                                                                                                                                                                                                                                                                                                                             78368
                                                                                                                                                                                                                                                                                                                                                           80670
                                                                                                                                                                                                                60094
                                                                                                                                                                                                                                                                                                                                                                                      87043
                                                                                                                                                                                                                                                                                                                                                                                                    89728
                                                                                                                                                                                                                                                                                                                                                                                                                  93098
38822
                                                                                                                                                                                                                                                                                                                                                                         83364
                                                                                                                                                                                                                                                                                                                                                                                                                                             99547
                                                                                                                             50171
                                                                                                                                                                                                                                                                                                                                                                                                                                96143
                                                                                                                                                                                                                                                                                                                                                                                                                                                           105085
                                                                                                                                                                                                                                                                                                                                                                                                                                                                          109495
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   129225
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       113826
```

```
1 (sites)
Makino,K., Yokoyama,K., Kubota,Y., Yutsudo,C.H., Kimura,S.,
Kurokwa,K., Ishii,K., Hattori,M., Tatsuno,I., Abe,H., Iida,T.,
Yamamoto,K., Ohnishi,M., Hayashi,T., Yasunaga,T., Honda,T.,
Sasakwa,C. and Shinagawa,H.
Complete nucleotide sequence of the prophage VT2-Sakai carrying the
Complete nucleotide sequence of the prophage Scherichia coli O157:H7
derived from the Sakai outbreak
Genet. Syst. 74 (5), 227-239 (1999)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       281530 bp DNA linear BCT 07-MAR-2001 Escherichia coli 0157:H7 DNA, complete genome, section 1/20. AP002550 BA000007 AP002550.1 GI:13359456
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Complete nucleotide sequence of the prophage VT1-Sakai carrying the Shiga toxin 1 genes of the enterohemorrhagic Escherichia coli
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  2 (sites)
Ohnishi,M., Murata,T., Nakayama,K., Kuhara,S., Hattori,M.,
Kurokawa,K., Yasunaga,T., Yokoyama,K., Makino,K., Shinagawa,H. and
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Bacteria; Proteobacteria; Gammaproteobacteria; Enterobacteriales;
Enterobacteriaceae; Escherichia.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Comparative analysis of the whole set of rRNA operons between an enterohemorrhagic Escherichia coli 0157:H7 Sakai strain and an Escherichia coli K-12 strain MG1655 Syst. Appl. Microbiol. 23 (3), 315-324 (2000) 20557356
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Yokoyama,K., Makino,K., Kubota,Y., Watanabe,M., Kimura,S.,
Yutsudo,C.H., Kurokawa,K., Ishii,K., Hattori,M., Abe,H., Iida,T.
Yamamoto,K., Hayashi,T., Yasunaga,T., Honda,T., Sasakawa,C. and
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Length 259498;
gap of unknown length gap of unknown length gap of unknown length gap of unknown length gap of unknown length scontig of 10396 bp in length gap of unknown length gap of unknown length gap of unknown length gap of unknown length scontig of 10098 bp in length gap of unknown length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      139 others
                                                                                                                                                                                                                                                                                                                                                               Location/Qualifiers
1. 259498
/organism="Mus musculus"
/mol_type="genomic DNA"
/db_xref="taxon:10090"
/clone="RP23-33604"
a 58720 c 57559 g 70128 t
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        1.7%; Score 24; DB 2;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Query Match 1.7%; Score 24; DB Best Local Similarity 100.0%; Pred. No. 2.3 Matches 24; Conservative 0; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     537 CTGTCGAGCTTCCAGCTGGAAACC 560
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Escherichia coli O157:H7
Escherichia coli O157:H7
                                                                                                                                                            174742:
                                                                                                                                                                                                        184830:
                                                                                                                                                                                                                                                    201876:
                                                                                                                                                                                                                                                                                                221979:
                                                                                                                                                                                                                                                                                                                                        259498:
                           144863:
                                                                        155259:
                                                                                                                  164645:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Shinagawa, H.
                           136675
                                                                        144864
                                                                                                                  155260
                                                                                                                                                            164646
                                                                                                                                                                                                        174743
                                                                                                                                                                                                                                                    184831
                                                                                                                                                                                                                                                                                                201877
                                                                                                                                                                                                                                                                                                                                             221980
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      72952 a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               (sites)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    10734605
                                                                                                                                                                                                                                                                                                                                                                                              source
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     DEFINITION
ACCESSION
VERSION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       KEYWORDS
SOURCE
ORGANISM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      BASE COUNT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           RESULT 15
AP002550
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      REFERENCE
AUTHORS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          MEDLINE
PUBMED
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      REFERENCE
AUTHORS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           JOURNAL
MEDLINE
PUBMED
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             REFERENCE
AUTHORS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        JOURNAL
                                                                                                                                                                                                                                                                                                                                                                    FEATURES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    TITLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               TITLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             TITLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ORIGIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ð
```

```
/translation="MVKVYAPASSANMSVGFDVLGAAVTPVDGALLGDVVTVESAETF
SLNNLGRFADKLPSEPRENIVYQCWERFCQELGKQIPVAMTLEKNMPIGSGLGSSACS
                                                                                                                                                                                                                                                                                                                                                                                  VVAALWAMNBHCGKPLNDTRLIALMGELEGRISGSIHYDNVAPCFIGGMQLMTEENDI
ISQQVPGFDEMLWVLAYPGIKVSTAEARAILPAQYRRQDCIAHGRHLAGFIHACYSRQ
PELAAKLMKDVIAEPYRERLLPGFRQARQAVAEIGAVASGISGSGPTLFALCDKPDTA
QRVADWLGKNYLQNQEGFVHICRLDTAGARVLEN"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    /product-"threonine synthase" .
/protein_id-"BAB33427.1"
/db_xref-"Gl:13359460#
/translation-"MKLYNLKDHNEQVSFAQAVTQGLGKNQGLFFPHDLPEFSLTEID
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        TLAFKDFGGRFMAQMLFHIAGDKPVTILTATSGDTGAAVAHAFYGLPNVKVVILYPRG
KISPLQEKLFCTLGGNIETVAIDGDFDACQALVKQAFDDEELKVALGINSANSINISR
LLAQICYYFEAVAQLPQEARNOLVVSVPSGNFGDLTAGLLAKSLGLPVKRFIAATNVN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     DTVPRFLHDGOWSPKATOATLSNAMDVSOPNWPRVEELFRRKIWOLKELGYAAVDDE
TTQOTMRELKELGYTSEPHAAVAYRALRDQLNPGEYGLFLGTAHPAKFKESVEAILGE
TLDLPKELAERADLPLLSHNLPADFAALRKLMMNHQ"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                /translation="MKKMQSIVIALSIVIVAPWATQAAEITLVPSVKLQIGDRDNRGY YWDGGHWRDHGWWKQHYEWRGNRWHPHGPPPPPRHHKRAHHDHHGGHGPGKHHR" complement(5700. 6476)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               QISTLMRISDKLAGINAARFHDWQPDFTPENARQAILAFKGDVYTGLQAETFSEDDFD
RAOQHLRMLSGSLYGYLRPLDLMQPYRLEMGIRLENARCKDLYQPWGDIITNKLNRALA
AQGDNVYINLASDFFKSVKPKKLANEIIKPYFLDEKNGKFKIISFYAKKARGLMSRF
IIENRLTKPEQLTGFNSEGYFFDEASSSNGELVFKRYEQR"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           /translation="MLILISPAKTLDYQSPLTTTRYTLPELLDNSQQLIHEARKLTPP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              EMLKLDFVTRSAKILSAFIGDEIPQEILEERVRAAFAFPAPVANVESDVGCLELFHGP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                /note="similar to B0005_ECOLI gi|1786186 percent identity 95 in 98 aa (Conserved in E.coli K-12)"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        /note="similar to YAAA_ECOLI gi|1786187 percent identity 99 in 258 aa (Conserved in E.coli K-12)" /codon_start=1
                                                                                                          /note="similar to THRB_ECOLI gi|1786184 percent identity 99 in 310 aa (Conserved in E.coli K-12)" /codon_start=1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            /note="similar to THRC_ECOLI gi|1786185 percent identity 99 in 428 aa (Conserved in E.coli K-12)"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       /product="hypothetical protein"
/protein_id="BAB33428.1"
/db_xref="GI:13359461"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     /product="hypothetical protein"
/protein_id="BAB33429.1"
/db_xref="GI:13359462"
                                                                                                                                                                                                                                                 /product-"homoserine kinase"
/protein_id="BAB33426.1"
/db_xref="GI:13359459"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                /evidence=not_experimental
/transl_table=11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      /evidence=not_experimental
/transl_table=11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 /evidence-not_experimental
                                                                                                                                                                                                /evidence=not_experimental
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          complement 6546. .7976)
/gene="ECS0007"
complement (6546. .7976)
/gene="ECS0007"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               complement(5700. .6476)
/gene="ECs0006"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           /transl_table=11
                                                                                                                                                                                                                             /transl_table=11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  3751. .5037
/gene="ECs0004"
3751. .5037
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         5251. .5547
/gene="ECs0005"
5251. .5547
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            3751. .5037
/gene="ECs0004"
                                                               2818. .3750
/gene="ECs0003"
  2818. .3750
/gene="ECs0003"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  5251. .5547
/gene="ECs0005"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         /codon_start=1.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            /codon_start=1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        dene
           gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      NHLVANIEKTI SGQDALDNI SDAERI FRELLTGLAAAQPGFPLAQLKIFVDQEFAQIK
HVLHGI SLLGQC PDS I NAALI CRGEKMS I AI MAGVLEARGHNVTVI DPVEKLLAVGHY
LESTVDI AESTRRI AASRI PADHWLAAGFFRAGHSKGELVVLGRNGSDYSAAVLAACL
RADCC EIWI DVDGVYT FROYPD PARTLAS MSY QEAMELS Y FGAKVLHPRTI TPI AQF
QI PCLIKTI SHRQAPQT DI GASR BEBELPV KGI SNILNINAANESV SGPGMKGMYGMAAR
VFAAMSRARI SVVLIT QSSSEY SI SFCVPQSDCVRAERAMQBEFY LEIKEGLLEPLAV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Direct Submission
Submitted (26-JUN-2000) Ken Kurokawa, Osaka University, Genome
Information Research Center; 3-1, Yamadaoka, Suita, Osaka 565-0871,
Japan (E-mall:ken@gen.info.osaka-u.ac.jp,
URL:http://www.gen.info.osaka-u.ac.jp/, Tel:81-6-6879-8365,
genome project.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               /note="similar to THRL_ECOLI gi|1786182 percent similarity 100 in 21 aa, but has 6 additional residues (Conserved in E.coli K-12)"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         /product="aspartokinase I-homoserine dehydrogenase I"
/protein_id="Bab33425.1"
/db_xref="GI:13359458"
/translation="MRVLKFGGTSVANAERFLRVADILESNARGGOVATVLSAPAKIT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               TERLAIISVVGDGMRTLRGISAKFFAALARANINIVAIAQGSSERSISVVVNNDDATT
GVRVTHQMLFNTDQVIEVFVIGVGGVGGALLEQLKRQQSWLKNKHIDLRVCGVANSKA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         LLTNVHGLNLENWQEELAQAKEPFNLGRLIRLVKEYHLLNPVIVDCTSSQAVADQYAD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      FLREGFHVVTPNKKANTSSMDYYHLLRHAAEKSRRKFLYDTNVGAGLPVIENLQNLLN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             AGDELMKFSGILSGSLSYIFGKLDEGMSFSEATTLAREMGYTEPDPRDDLSGMDVARK
LLILARETGRELELADIEIEPVLPAEFNAEGDVAAFMANLSQLDDLFAARVAKARDEG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   KVLRYVGNIDEDGVCRVKIAEVDGNDPLFKVKNGENALAFYSHYYQPLPLVLRGYGAG
NDVTAAGVFADLLRTLSWKLGV"
                                                                                                                                                                                                                                                                                                                                                                                                               5 (bases 1 to 281530)
Ohnishi,M., Kurokawa,K., Makino,K., Yasunaga,T., Shinagawa,H. and
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          /note="similar to THRA_ECOLI gi|1786183 percent identity 99 in 820 aa (Conserved in E.coli K-12)"
                                                                                                          4 (sites)
Hayashi,T., Makino,K., Ohnishi,M., Kurokawa,K., Ishii,K.,
Yokoyama,K., Han,C.-G., Ohtsubo,E., Nakayama,K., Murata,T.,
Tanaka,M., Tobe,T., Iida,T., Takami,H., Honda,T., Sasakawa,C.,
Oqasawara,M., Yasunaga,T., Kuhara,S., Shiba,T., Hattori,M. and
                                                                                                                                                                                                                                                                           Complete genome sequence of enterohemorrhagic Escherichia coli 0157:H7 and genomic comparison with a laboratory strain K-12 DNA Res. 8 (1), 11-22 (2001)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              /translation-"MKRISTTITTITTITITITTGNGAG"
354. .2816
/gene="ECS0002"
354. .2816
/gene="ECS0002"
0157:H7 strain derived from the Sakai outbreak
Gene 258 (1-2), 127-139 (2000)
20564182
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    1. .281530
/organism="Escherichia coli 0157:H7"
/mol_type="genomic DNA"
/strain="0157:H7"
/sub_strain="RIMD 0509952"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          /product-"thr operon leader peptide"
/protein_id="BaB33424.1"
/db_xref="GI:13359457"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           /evidence-not_experimental/transl_table=11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         /evidence=not_experimental
/transl_table=11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           /db_xref="taxon:83334"
190. .273
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        190. .273
/gene="ECs0001"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           190. .273
/gene="ECs0001"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              /codon_start=1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     /codon_start=1
                                                                                                                                                                                                                                                    Shinagawa, H.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Hayashi, T
                                                                             11111050
                                                                                                                                                                                                                                                                                                                                                                                        11258796
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             source
                                                                                                                                                                                                                                                                                                                                                                                                               REFERENCE
AUTHORS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            TITLE
JOURNAL
                                                                                                                                                                                                                                                                                                                                                           MEDLINE
PUBMED
                         JOURNAL
MEDLINE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             gene
                                                                                PUBMED
                                                                                                                REFERENCE
                                                                                                                                       AUTHORS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    CDS
                                                                                                                                                                                                                                                                                                                              JOURNAI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             FEATURES
                                                                                                                                                                                                                                                                              TITLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   COMMENT
```

```
/note="similar to YAAJ_ECOLI gill786188 percent identity
99 in 476 aa (Conserved in E.coli K-12)"
/codon_start=1
/vuldence=not.experimental
/vidence=not.experimental
/transl_table=11
/product="purative inner membrane transport protein"
/protein_id="BAB34330.1"
/db_xref="Gi:13359463"
/translation="mpDFFSFINSUMGSVMIYLLFGAGCWFTFRTGFVQFRYIRQFG
KSLKNSIHPPPGGITSFOSLCTSLAARVGSGNLAGTALAIRGGRAVFWWWAAFIG
MATSFAECSLAQLYKERDVNGQFRGGPAWTWARGLGGNRWMGVLFAVFILLIAYGITFSG
VQARNANALSFSFDFPPLVTGILLAYFACHALIAIRGLGGAYLLAGGFVPLAMAITWVIT
SLVICVINIGGLPHVIWSIEESAFGWOBAAGGAYTLCAASAMIILLAGNGTYMPLEGIO
LIQRAMAAAAASWPPHPAAQGIVQMIGIFIDTLVICTASAMIILLAGNGTTYMPLEGIO
LIQRAMALVLAGGARADAILAIRGLADIIMACWAITHLASDYLRQRRIGGY
TFAAVIGGTLLSLPAWADDVSQE"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Query Match
1.7%; Score 24; DB 1; Length 281530;
Best Local Similarity 100.0%; Pred. No. 2.3;
Matches 24; Conservative 0; Mismatches 0; Indels 0
```

g

ò

ö

Gaps

ö

Search completed: August 14, 2003, 06:15:42 Job time : 5311 secs

```
GenCore version 5.1.6 Copyright (c) 1993 - 2003 Compugen Ltd.
```

OM nucleic - nu	OM nucleic - nucleic search, using sw model	
Run on:	August 14, 2003, 01:08:54; Search time 5305 Seconds (without alignments) 11181.708 Million cell updates/sec	
Title: Perfect score: Sequence:	US-09-701-229-1 1450 1 cgtgctgatcggcctcgccatgttgagccggcacggca	<del></del>
Scoring table:	IDENTITY_NUC Gapop 10.0 , Gapext 1.0	
Searched:	2888711 segs, 20454813386 residues	•
Total number of	Total number of hits satisfying chosen parameters: 5777422	
Minimum DB seq Maximum DB seq	Minimum DB seq length: 0 Maximum DB seq length: 2000000000	
Post-processing	Post-processing: Minimum Match 10% Maximum Match 100% Listing first 45 summaries	
Database :	GenEmbl:* 1: gb_ba:*	

2: 9b\_htg:\*
4: 9b\_on:\*
4: 9b\_on:\*
5: 9b\_pt:\*
6: 9b\_pt:\*
7: 9b\_pt:\*
8: 9b\_pt:\*
10: 9b\_pt:\*
11: 9b\_st::\*
11: 9b\_st::\*
12: 9b\_sy:\*
13: 9b\_oui:\*
14: 9b\_vi:\*
15: em\_bu:\*
16: em\_bu:\*
17: em\_hum:\*
18: em\_li:\*
19: em\_or:\*
20: em\_or:\*
21: em\_or:\*
22: em\_or:\*
23: em\_pt:\*
24: em\_pt:\*
25: em\_tg:\*
25: em\_tg:\*
26: em\_tg:\*
27: em\_tg:\*
28: em\_tg:hum:\*
29: em\_tg:hum:\*
31: em\_tg:hum:\*
31: em\_tg:hum:\*
32: em\_tg:hum:\*
33: em\_tg:hum:\*
34: em\_tg:hum:\*
35: em\_tg:htg:hum:\*
36: em\_tg:hum:\*
37: em\_tg:hum:\*
38: em\_tg:hum:\*
38: em\_tg:hum:\*
39: em\_tg:hum:\*
39: em\_tg:htg:hum:\*
40: em\_tg:htg:hum:\*

Pred. No. is the number of results predicted by chance to have a

score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

RIES			AA4141443 AA616960 AE016965 BAC020876 BAC020876 BAC162758 AL162758 AE004310 AP005045 AE004014 AE005045 AE016798 BAC16798 BAC16798 AE016798 AE016798 BAC181145 AE006048 AE006048 AE006048 AE006048 AE006048 AE006048 AE006048 AE006048 COntinuat	GINMENTS  10 bp DNA linear BCT 19-FEB  11, section 417 of 529 of the complet  11  Gammaproteobacteria; Pseudomonadales  nas.  Erwin,A.L., Mizoguchi,S.D., Warrene
SUMMARIE	AE004856 AE016779 AE016773 AE016871 AL627265 AE016834 AE016899 AE0165046 AE016578 AE016578	AF001330 AF016755 ECMUROY AR010118 AX191720 ECCAIN ECCAIN AX189058 ECMURD AR013053 AC073937 AR013955	AJ414143 AJ414143 AB016960 AE015855 AC020876 AE016860 NMA722491 AE004310 AP005044 AP005045 AE004399 AX016798 MTCX270 AX191745 AE0059391111 SCO9391111 SCO939111 AR016068 BX248341 AE006048 AX191762 AX191762 AX191762	AL 240 PAC PAC PAC 1a, domo
4 : s	000000000000000000000000000000000000000	200 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 1 2 1 1 2 1 1 1 2 1 1 2 1 1 2 1 1 1 2 1 1 1 2 1 1 1 2 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	301050 1301050 1301050 13105048 201050 1055050 1055050 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629 10629	aeruq 04093 GI:99 Geruq aeruq aeruq ceael to 24
& Query e Match	999 611.8 223.22 200.1 200.1 100.1	11111111111111111111111111111111111111	vvva4u8rv440000000rvvvvv	E004856 seudomona enome. E004856. A E004856. S seudomona acteria; seudomona acteria; seudomona tobases
Sco	13966 88957 882728 3327 2912 2012	20 20 20 20 20 20 20 20 20 20 20 20 20 2	0044 0 88	RESULT 1 AEOUS 856/C ADOUS BEFINITION P ACCESSION A VERSION A VERYWORDS SOURCE P ORGANISM B REFERENCE P AUTHORS SUTTHORY SAUTHORY

TITLE

```
AKTAREOGRARAKGETLOGLEBARAVVERGKRYGNNHFDVOLIGGMTLHOGKTAEM
RTGEGKTLVGTLPYTLAALGGKGVHYVTVNDYLARRDANWARPLYEFGLGLSVGYVTPF
QPPEDRRAAYAADITYGTNNEEFGPTVLROMMAPSLDDKFQRELWAAVDEVOSTLIDE
ARTPELISGOAEDSSELY KINKLIPELRROVESVERPTEEGHSVONTUPF
QPEDRRAAYAADITYGTNNEEFGPTVLROMMAPSLDDKFQRELWAVDEVOSTLIDE
ARTPELISGOAEDSSELY KINKLIPELRROVESVERPTEECHSTONESTLIDE
ARTPELISGOAEDSSELY KINKLIPELRROVESVERPTERHYVEY 1VGCDOIL
LIDBHTROFWARRELSEGLHOOLEAGTSTTPONESTLASTTPONESTLNEAGMTG
TADTEAFERROLYGLLOVY TPTHRPTARKDFNULVILTGERY AAI TPINKCAGMTG
TADTEAFERROLYGLLOVY TPTHRPTARKDFNULVILTGERY AAI TPINKCAGMTG
TADTEAFERROLYGLLOVY TPTHRPTARKDFNULWY TRYKTRALGGGGGTHY ASERHESRR
IDNOLRGGRAGGDPGSSRFYLSLEDNLAM IF ASDRVKNEMKALGGGGGTHY ASERHESRR
IDNOLRGGRAGGDPGSSRFYLSLEDNLAM IF ASDRVKNEMKALGGGGGTIK KEREE
TLGATINOHIPPOSLPEGWDIEGLEDDYANGORVY TYMHRNTLLSAEDVGGTIK KEREE
TLGATINOHIPPOSLPEGWDIEGLERALYSDFANKDHLSTHOHLRRUTHRAY PKORTERPORTER FREEL
EQIVAAYTEKEELAGAEALRAFEKOMLLRYCHUDDUKKPHLSTHOHLRRUTHRAY OHARESTELERKRESTELEGISSELSKRYRHESPRINGEN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           /product="hypothetical protein"
/product="hypothetical protein"
/protein_id="aag07792.1"
/protein_id="aag07792.1"
/protein_id="aag07792.1"
/protein_id="aag07792.1"
/translation="hillEngnehersynhioperlimagacyngaelerwgam
LFRapapvagIevDaalQaQsaeIsSaareDaQRQMDaLSVHLGELQarLvRLDaLGER
LFELADVDDEDEFSLSYGGGGVDEPLEGSAXAPPSFWATLDELAARLDTREQQLEV
EQLLADKHISGSTYLAGQPYRGGYISSPFGRRVNPYSGRLSMHKGIDFAAPAGSDVA
VAAGVYTWSGRRUGCNYVEVGHADGYTTLYAHNQRNLYEVGDLVKRGQYLAKYGSTG
RSTGYHVHFEVMKDGRVWNPQSFIARASVSE"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     /translation-"MLFAEAQRICRLQQLLESQLQPAARPYCHVASWRGGCLLLIVTD
GHWATRLRYQQRRLQRQLQAFEEFANLAKILFKVQPTTSTQRAARRSLTLSAVAAENL
RESAEIVGNPRLREALERLASRAEKSRQE"
                                            SRQFVHDGVTVTVTGISKGAGMIKPNMATMLGYIATDAKVAQGVLQDLLRDAANKSFN
RITIOEDTSTNDCCMLIATGRAALPEYDASGALFAALKQAVLEVSWEAGAGIVBDGE
GATKFYTVQVNGGAFTHGECLDVGYAVAHSPLIKTALFASDPWGRILAAVGRAGVANI
DVSKIDVFLGDVCIASRGGRAASYTEEQGAAVMAQAEIGIRIELGRGTCSETIWTDL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 /product-"secretion protein Seca"
/protein_id-"aAG07791.1"
/db_xreff-"G1:9950635"
/translation-"MFAPLLKKLFGSKNERDVKRMAKAVQAINALEPQMVALSDEQLK
             agvaetsvlpystgvigeplpvakieaalpaaladlaedrwaeaaagimttdtlpkga
                                                                                                                                                                                                                                                                                                                                                                                                                                                                               /iccus_tag="PA4403"
/note="Protein name confidence: Class 2 (high similarity
to functionally studied protein)"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           of
no
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               of
no
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 5409. :5804
/locus_tag="PA4405"
5409. :5804
/locus_PA4405"
/note="Protein name confidence: Class 4 (homologs previously reported genes of unknown function, or similarity to any previously reported sequences)"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      /locus_tag="PA4404"
complement(4339. 5262)
/locus_tag="PA4404"
/note="Protein name confidence: Class 4 (homologs previously reported genes of unknown function, or similarity to any previously reported sequences)"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        /product-"hypothetical protein"
/protein_id-"AAG07793.1"
/db_xref-"GI:9950637"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      /locus_tag="PA4406"
/note="synonyms: envA, asmB"
                                                                                                                                                                                                                                                                                                                                                                                               complement(1455. .4205)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      .5262)
                                                                                                                                                                                                                                                                      complement(1455. .4205)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      complement(5865. .6776)
                                                                                                                                                                                                                                                                                                                                                       /locus_tag="PA4403"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      complement (4339.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             /transl_table=11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                /codon_start=1
/transl_table=11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     /transl_table=11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             /codon_start=1
                                                                                                                                                                                                                          SHEYVKINAEYRT
                                                                                                                                                                                                                                                                                                          /gene="secA"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              /gene="lpxC"
                                                                                                                                                                                                                                                                                                                                                                                                                                                /gene="secA"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   5
                                                                                                                                                                                                                                                                           gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               gene
                                                                                                                                                                                                                                                                                                                                                                                                   CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     accuracy of the protein name.

Class 1: Function experimentally demonstrated in P. aeruginosa.

Class 2: Function of highly similar gene experimentally demonstrated in another organism (and gene context consistent in terms of pathways its involved in, if known).

Class 3: Function proposed based on presence of conserved amino acid motif, structural feature or limited sequence similarity to an experimentally studied gene.
                                                                                                                                                                                                                                                                                                                                                                    Stover, C.K., Pham, X.-O.T., Erwin, A.L., Mizoguchi, S.D., Warrener, P., Hickey, M.J., Brinkman, F.S.L., Hufnagle, W.O., Kowalik, D.J., Lagrou, M., Garber, R.L., Goltry, L., Tolentino, E., Westbrock-Wadman, S., Yuan, Y., Brody, L.L., Coulter, S.N., Folger, K.R., Kas, A., Larbig, K., Lim, R.M., Smith, K.A., Spencer, D.H., Mancock, R.E. W., L., Paulsen, I.T., Reizer, J., Saier, M.H., Direct Submission
Lagrou, M., Garber, R.L., Goltry, L., Tolentino, E., Westbrock Wadman, S., Yuan, Y., Brody, L.L., Coulter, S.N., Folger, K.R., Kas, A., Larbig, K., Lim, R.M., Smith, K.A., Spencer, D.H., Wong, G.K.. S., Wu, Z. and Paulsen, I.T. Complete genome sequence of Pseudomonas aeruginosa PA01, an
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Class 4: Homologs of previously reported genes of unknown function,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             /translation-"MAVGLGPLSTLHPVPGFELGIASAGIKRPGRKDVVVMRCAEGSS
VAGVFTLNAFCAAPVTLAKQRFLGEVRYLLINTGNANAGTGEAGLAAAAQTCAKLAEL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     //ocus_tag="PA4402"
//ocus_tag="PA4402"
/note="Protein name confidence: Class 2 (high similarity to functionally studied protein; Subcellular localization: Cytoplasmic; Subcellular localization confidence: Class 2; Alt protein name: ornithine transacetylase"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  We welcome
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               updated, reviewed, Pseudomonas aeruginosa PAOI genome annotation, from PseudoCAP (see http://www.pseudomonas.com for latest updates and links to alternate annotations). PseudoCAP is coordinated by Fiona S.L. Brinkman (sinkman (sinkman (sinkman) (
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Submitted (16-MAY-2000) Department of Medicine and Genetics, University of Washington Genome Center, University Of Washington, Box 352145, Seattle, WA 98195, USA
3 (bases 1 to 24000)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          'Protein name confidence' is used to rate our confidence of the
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            This represents the February 3, 2003 version of the continually
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Pseudomonas aeruginosa Community Annotation Project (PseudoCAP)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         no similarity to any previously reported sequences.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Submitted (04-FEB-2003) Department of Molecular Biology and Biochemistry, Simon Fraser University, 8888 University Dr., Burnaby, British Columbia V5A 1S6, Canada
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     /product="glutamate N-acetyltransferase"
/protein_id="AAG07790.1"
/db_xref="G1:9950634"

    24000
/organism="Pseudomonas_aeruginosa PAOI"

                                                                                                                                                                                                        opportunistic pathogen
Nature 406 (6799), 959-964 (2000)
20437337
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             /mol_type="genomic DNA"
/strain="PAO1"
/db_xref="taxon:208964"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  /gene="argJ"
/locus_tag="PA4402"
complement(91, 1308)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              complement(91, .1308
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      /transl_table=11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             /codon_start=.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            /gene="argJ"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Direct Submission
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ä
                                                                                                                                                                                                                                                                                                                                                  10984043
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     source
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    TITLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              REFERENCE
AUTHORS
CONSRIM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          TITLE
JOURNAL
                                                                                                                                                                                                                                                                                                          MEDLINE
PUBMED
                                                                                                                                                                                                                                                                                                                                                                                      REFERENCE
AUTHORS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  gene
                                                                                                                                                                                                                                                              JOURNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         FEATURES
```

COMMENT

```
15835
                                                                                                                                                                                    15655
                                                                                                                                                                                                                                                                                     15535
                                                                                                                                                                                                                                                                                                                                     15475
                                                                                                                                                                                                                                                                                                                                                                                     15415
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       15235
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       15175
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        15115
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         15055
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         14995
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           14875
                                                                                   15775
                                                                                                                                                                                                                                     15595
                                                                                                                                                                                                                                                                                                                                                                                                                                     15355
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     15295
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           14935
                                                                                                                                     15715
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1081
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               1141
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               1201
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 1261
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 1381
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   1441
                                                                                                                                                                                                                                                                                                                                                                                                                                                               1021
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  1321
                                                                                                                                                                                                                                                             781
                                                                                                                                                                                                                                                                                                                                                              901
                                                                                                                                                                                                                                                                                                                                                                                                              961
                                                            541
                                                                                                             601
                                                                                                                                                              661
                                                                                                                                                                                                                                                                                                              841
            481
                                                                                                                                                                                                             721
                                                                                                                                                           CGGCACCCCGGCGCTCGACCTGCTGCTGCCGACGACCTCTACGTGTTGGAGCTGTC
                                                                                                           CACCCTGGTGGGCGAAATGGCGGTGGCCGCGGACAAGCGTGTCGCCGTCGGCGGCAACCT
                           CGGCACCCCGGCGCTCGACCTGCTGGCCGACATCGAGCTGTACGTGGTTGGAGCTGTC
                                                                                                                                                                                                              GATCTTCCGCGGTGCCCGCCAGGTCGTGATCGCGCCGATGCCCTGACCCGACCGCT
                                                                                                                                                                                                                                                              GATCGCCGATACCGTGCCGTGCTGGTCGTTCGGCCTGAACAAGCCGGACTTCAAGGCTTT
                                                                                                                                                                                                                                                                                                              CGGCCTGATCGAGGAGGGCCAGAAGTGGCTGGCGTTCCAGTTCGACAAGCTGCTGCC
                                                                                                                                                                                                                                                                                                                                                               GGTTGGCGAACTGAAGATCCGTGGCGCCCACACTATTCCAACGCGCTCGCCGCGCTGGC
                                                                                                                                                                                                                                                                                                                                                                                                              GCTGGGCCATGCGGTCGGCCTGCCGTTCGACGCCATGCTCGGCGCGCTGAAGGCGTTTTC
                                                                                                                                                                                                                                                                                                                                                                                                                                                               CGGCCTGGCTCATCGCTGCCAGTGGGTACGCGAGCGGCAGGGCCGTGAGCTACTACGACGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     TTCCAAGGCCACCAACGTCGGCGCCGCCCTGGCGGCGATCGAGGGGCTGGGTGCCGACAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               CGACGGCAAGCTGGTGCTGCTCGCCGGCGGAGACGGCAAGGGCGCCGATTTCCATGACCT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               GCGCGAGCCGGTCGCGCGCTTCTGCCGGGCGGTGGTACTGCTTGGCCGTGACGCCGGGCT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            GATTGCCCAGGCACTGGGCAACGCGGTACCGCTGGTGCGCGTCGCAACGCTGGACGAAGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  AGTCCGGCAGGCCGCCGAGCTGGCCCGCGAAGGCGATGCGGTGCTGTTGTCGCCGGCCTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   CGCGAGCCTGGACATGTTCAAGAACTTCGAAGAACGCGGACGCCTGTTCGCCAAAGCCGT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    AGAGGAGCTAGCGTGATGCTGTCGGTGTTGCGCCCCTTCCCGTCGCCGCTGTTGAGCCGG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                          CACGGCATC 1450
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |||||||||
14874 CACGGCATC
                                                                                   15834
                                                                                                                                                                                                                                                             722
                                                                                                                                                                                                                                                                                                              782
                                                                                                                                                                                                                                                                                                                                                              842
                                                                                                                                                                                                                                                                                                                                                                                                              902
                                                                                                                                                                                                                                                                                                                                                                                                                                                               962
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               1142
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 1202
                                                            482
                                                                                                                                                                                                             662
                                                                                                                                                                                                                                                                                                                                     15534
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1022
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               1082
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         15114
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  1262
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         15054
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   1322
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         14994
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   1382
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           14934
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     1442
            422
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Q
Q
                                                                                                                                   g
                                                                                                                                                                                g
                                                                                                                                                                                                           δý
                                                                                                                                                                                                                                   g
                                                                                                                                                                                                                                                         ÓΥ
                                                                                                                                                                                                                                                                                 g
                                                                                                                                                                                                                                                                                                             οy
                                                                                                                                                                                                                                                                                                                                 d
                                                                                                                                                                                                                                                                                                                                                           ογ
                                                                                                                                                                                                                                                                                                                                                                                   qq
                                                                                                                                                                                                                                                                                                                                                                                                              ö
                                                                                                                                                                                                                                                                                                                                                                                                                                 q
                                                                                                                                                                                                                                                                                                                                                                                                                                                           δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   qq
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ŏ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         엄
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           g
                                g
                                                          δ
                                                                             g
                                                                                                           ò
                                                                                                                                                             ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ö
                                                                                                                                                                                                                                                                                                                                                          /translation="Mfelvuniagravikvigygggggnavnhwaknnvegyeftcan
TDAQALKNIAARTVLQLGPGVTKGLGAGANPEVGRQAALEDRERISEVLEGADMVFIT
TDAGALKNIAARTVLQLGPGVTKGLGAGANPEVGRQAALEDRERISEVLEGADMVFIT
TGMGGGTGCTGAAPTIAEVAKEMGILTVAVVTRFPFPEGKRKMOIADEGIRALAESVDS
LITIPNEKLLTILGKDASLLAAFAKADDVLAGAVRGISDIIKRPGMINVPFADVKTVM
SEMGMAMMGTGCASGPNRAREATEAAIRNPLLEDVNLQGARGILVNITAGPDLSIGEY
SDVGNIIEQFASEHATVKVGTVIDADMRDELHVTVVATGLGARLEKPVKVVDNITVGGS
ADAAAPAQREQGSVNYRDLDRPTVWRNQSHGSAATAAKLNPQDDLDYLDIPAFLRRQ
AD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    16135
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  16255
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    16195
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     16075
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      16015
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            /translation="WIKQRTHKNIIRATGVGLHSGEKVYL/ILKPAPVDTGIVECRTDL
DPVVEIPARAENVGETTMSTTLVKGDVKVDTVEHLLSAMAGLGIDNAVVELSASEVPI
MDGSAGPFVFLIQSAGLQEQEAAKKFIRIKREVSVEEGDKRAVFVPFDGFKVSFEIDF
                                                                                                                                                                      DHPVFRGRTQQASVDFSSTSFVKEVSRARTFGFMRDIEYLRSONLALGGSVENAIVVD
ENRVLNEDGLRYEDEFVKHKILDAIGDLYLLGNSLIGEFRGFKSGHALNNQLLRTLIA
DKDAWEVVTFEDARTAPISYMRPAAAV"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ö
                                                  protein
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               301
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                361
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                421
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           61
                                                                                                                                                                                                                                                                                     (high similarity
                                                                                                 deacetylase"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          CGAGTTCCTCTGCTCCGCCCGCGAACTCTATGTCAGCCCCGGCTTGTCGCTGCGCCCCCC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         CGAGTTCCTCTGCTCCGCCGCGGAACTCTATGTCAGCCCCGGCTTGTCGCTGCGCACCCC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          GTGCTGATCGGCCTCGCCACCTTGAAGCTGCGTTGAGGACGAAGAGAGCATGAGCCTGAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           GCTGGCCACCCTGCGTGCCCAGTATCCGCAGGTGGAAGTGCGTTGCGGCGAACTCGACGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              TGCGCTGGTACAGGCCGCCGCGAAAGGCGTGCGCATCTCCGGTGACATCGATCTTCGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               CCGCGAGGCGAAGGCCCCGATCGTCGCCATCACCGGTTCCAACGCGAAGAGCACGTGAC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Gaps
                                 Class 1 (function
P. aeruginosa); Alt
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 .;
0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Length 24000;
                                                                                            /product="UDP-3-0-acyl-N-acetylglucosamine
/protein_id="AAG07794.1"
/db_xref="G1:9950638"
                                                                                                                                                                                                                                                                   /Jours_tag="PA4407"
/Jours_tag="PA4407"
/note="Protein name confidence: Class 2 (
for functionally studied protein)"
/codon_start=1
/transl_table=11
/product="cell division protein Ftsz"
/protein_id="AAG07795.1"
/db_xref="G1:9950639"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Indels
                                                                                                                                                                                                                                                                                    N
                                                귭.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      99.9%; Score 1449; DB 1; I
100.0%; Pred. No. 2.6e-163;
Live 0; Mismatches 0;
                      /locus_tag="PA4406"
/note="Protein name confidence:
experimentally demonstrated in pame: EnvA protein"
                                                                                                                                                                                                                       /gene="ftsZ"
/locus_tag="PA4407"
complement(6889. .8073)
/gene="ftsZ"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                        complement(8124. .9377)
complement(5865. .6776)
                                                                                                                                                                                                           complement(6889. .8073
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    /gene="ftsA"
/locus_tag="PA4408"
                                                                                    /transl_table=11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   sal Similarity
1449; Conserv
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Query Match
Best Local Si
Matches 1449;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 16194
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        7
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  16134
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 16314
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          62
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  16254
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           122
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           182
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            242
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     16074
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              302
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               362
                                                                                                                                                                                                           gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                          gene
                                                                                                                                                                                                                                                CDS
CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  유
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ö
```

```
/product naid=Mad45237.1"
/db_xref="G1:12007718"
/db_xref="G1:12007718"
/tanslation="MSLIASDHFRIVVGLGKSGMSLVRYLARRGLPFAVVDTRENPPE
LATLRAQYPQVEARCGELDAEFLCSARELYVSPGLSLRTPALVQAARGVRISGDIDL
EATERAQYPUXITGSNAKSTVTTLVGEMAVAADKRYAVGGRIGTPALDLLADDIELLV
LELSSFQLETCDRLNAEVATVLNVSEDHMDRYDGMADYHLAKHRIFRGAVVNRAD
ALTRPLIADTVPCWSFGLIKDFRAFGLIEDGOGWHAFQFGKLKIRGAHNY
SNALAALGHAVGCHSFDAMGALKAFSGLAHRCOWYRERGGVSYYDDSKATNVGAAL
ATGGLGADDIDGKLVLLAGGDGKGADFHDLREPVARERGGVSYYDDSKATNVGAAL
VPLVKVATLDBAVQAAELARGGOKGADFHDLREPVARFCRAVVLLGRDAGLAOGNA
VPLVKVATLDBAVQAAELARGGDAVLLSPACASLDMFKNFEERGRLFAKAVEELA"

1781 c 1759 g 923 t
/translation-"MLEPLRLSQLTVALDARLIGEDAVFSAVSTDSRAIGPGQLFIAL
SQRFPGCHUTLAEVAAKGANALVEREVADAPLDEPQLLVRDTRAALGRAGALRRRFTG
PLAAMTGSSGKTAVREMIASILRTQAGDAEVJATRGNLNNDLGVPLTLLQLAPQHRS
AVIELGASRIGEIAYTVELTRPHVAIITNAGTAHVGEFGGPEKIVEAKGEILEGLAAD
                                                                                                                                GTAVLNLDDKAFDTWKARASGRPLLTFSLDRPQADFRAADLQRDARGCMGFRLQGVAG
BAQVQLNLLGGRHNVANALLAAAAAAHALGVPLOGIVAGLVAGLOGIOVGGRAVQLTRSGLR
VIDDSYNANPSAMLAAT IDILSGFSGRPVLVLGDMGELGSWARQAHREVGAYAAGKVVSA
LYAVGPLMAHAVQAFGATGRHFADQASLIGALATEQPTTTILIKGSRSAAMDKVVAAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  /translation="Milliaeyloofykgfovfoyltikgilsvltalslslwigpww
iverloofogavrndofyghlskykfoyrpwodalitraliststrumalsnrywvu
vytlleogaqavrnxkvieknskgldsrwykytwyci
ivpwlksveiglgifevvltyfvivgssnavnlydgldglanptywyagalfettl
ivpwlksveilipworagellykcalivgasnavnlydgldglaimptwwyagalgifcyl
sowkraextlipworagellykcalivgashgloofykwigalgifcyl
igtiavivroeivylhagyrwetlsymigyaskligarafihhfelkgwp
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          9940 CGCCTCCGACCACTTCCGCATCGTTGTTGTCGGCAAGAGCGGCATGTCCCTGGTGCG 3999
                                                                                                                                                                                                                                                                                                2833. 3915
//gene="mray"
2833. 315
//gene="mray"
//note="phospho-N-acetylmuramoyl-pentapeptide translocase"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 /note-"UDP-N-acetylmuramyl-L-alanine:D-glutamate ligase; recombinant enzyme catalyzed the ATP-dependent addition of D-glutamate to the precursor sugar peptide"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  4000 CTACCTGGCGCGCGCGCCTTGCCTTTCGCCGTGGTCGATACCCGAGAGACCGCCGGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       2 GTGCTGATCGGCCTCGCCACCTTGAAGCTGCGTTGAGGACGAAGAGCATGAGCCTGAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           62 CGCCTCCGACCTTCCGCATCGTTGTCGGCCTCGGCAAGAGCGGCATGTCCCTGGTGCG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            122 CTACCTGGCGCGCGCGCGCGTTGCCTTTCGCCGTGGTCGATACCCGAGAGACCCGCGGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  182 GCTGGCCACCCTGCGTGCCCAGTATCCGCAGGTGGAAGTGCGTTGCGGCGAACTCGACGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Length 5280;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Score 1396.2; DB 1;
Pred. No. 6.9e-157;
0; Mismatches 3; ]
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       /protein_id="AAG22121.1"
/db_xref="G1:10719754"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     /transl_table=11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        /transl_table=11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        /product="Mray"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                      /codon_start-1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            /codon_start=1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       3929. .5275
/gene="murD"
3929. .5275
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      3929. .5275
/gene="murD"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Query Match
Best Local Similarity 99.8%;
Matches 1398; Conservative
                                                                                                                                                                                                                                                                           CGSSEESH"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             æ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         817
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      BASE COUNT
ORIGIN
                                                                                                                                                                                                                                                                                                             gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              gene
                                                                                                                                                                                                                                                                                                                                                                        CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         QQ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           å
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ò
                                                                 AY008276 5280 bp DNA linear BCT 19-JUL-2001 Pseudomonas aeruginosa MurE (murE), MurF (murF), MraY (mraY), and MurL (murD) genes, complete cds.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               /procein_id="AAQ45235.1"
Abrocein_id="AAQ45235.1"
Abrocein_id="AAQ45235.1"
Abrocein_id="Color: Argor A
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    RSSIAAKGGLLRSPLLGRFNLSNLLAAŸGALLGIGYPLGDILRTLPQLGGPVGRWGNL
GGGGRLVWDVANPYANPADLEKVLEALRPHAARLLCLFGCGGDRDAGKRPLMAJTAER
LADBYLYTDDNPRTRSAAJIADIRGFAADRVYFLPSRGEAIAHLIASAAVDDVVL
LAGKGHEDYQEIDGVRHPFSDIEQAERALAAMBYPHA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     //orde="recombinant enzyme catalyzed the ATP-dependent addition of D-alanine-D-alanine to the UDP-N-acetylmuramyl-L-alanine-D-glutamate-m-Dap precursor"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           El-Sherbeani, M. and Azzolina, B.
El-Sherbeani, M. and Azzolina, B.
Pseudomonas aeruginosa mray, murb, murE, and murF genes
Unpublished
(pases 1 to 5280)
El-Sherbelni, M. and Azzolina, B.
Submitted (20.5EP-2000) Biochemistry, Merck Research Laboratories,
126 E. Lincoln Avenue, Rahway, NJ 07065, USA
(pases 1 to 5280)
El-Sherbelni, M. and Azzolina, B.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Direct Submission
Submitted (02-JAN-2001) Biochemistry, Merck Research Laboratories,
126 E. Lincoln Avenue, Rahway, NJ 07065, USA
Sequence update by submitter
On Jan 2, 2001 this sequence version replaced g1:10719753.
Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ō
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 1. .1464
/gene="murE"
/note="UDP-N-acetylmuramoyl-L-alanyl-D-glutamate:meso-2,
6-diaminopimelate ligase"
                                                                                                                                                                                                                                                                                                                                                                 Pseudomonadaceae; Pseudomonas.
1 (bases 1 to 5280)
Azzolina, B.A., Yuan, X., Anderson, M.S. and El-Sherbeini, M.
The cell wall and cell division gene cluster in the Mra operon of
Pseudomonas aeruginosa: cloning, production, and purification of
                                                                                                                                                                                                                                                                                                                                  Bacteria; Proteobacteria; Gammaproteobacteria; Pseudomonadales;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  1. .5280
Corganism-Pseudomonas aeruginosa"
/mol_type-"genomic DNA"
/db_xref-"taxon:287"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Protein Expr. Purif. 21 (3), 393-400 (2001)
21178826
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               /product="MurF"
/protein_id="AAG45236.1"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        /transl_table=11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            /transl_table=11
                                                                                                                                                                                                  GI:12007715
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         /codon_start-1
                                                                                                                                                                                                                                                                                                      Pseudomonas aeruginosa
                                                                                                                                                                                                                                                                       Pseudomonas aeruginosa
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            1457. .2833
/gene="murF"
1457. .2833
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         /gene="murE"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         /gene="murF"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          1. .1464
                                                                                                                                                                   AY008276
AY008276.2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         11281713
                                                                                                                                                               ACCESSION
VERSION
KEYWORDS
SOURCE
ORGANISM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         source
                                                                                                 DEFINITION
                                                                                                                                                                                                                                                                                                                                                                                                 REFERENCE
AUTHORS
TITLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  REFERENCE
AUTHORS
TITLE
JOURNAL
REFERENCE
AUTHORS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       TITLE
JOURNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                JOURNAL
MEDLINE
PUBMED
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       TITLE
JOURNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               gene
RESULT 2
AY008276
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     REFERENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        AUTHORS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          gene
```

CDS

REMARK FEATURES COMMENT

```
/product="conserved hypothetical protein rigr00242"
/protein_id="aAN66951.1"
/db_xref="col:24982786"
/tanslation="MWGITAVFRGANAVSLDARGRLAMPSRYRDELDSRCNGQLIVTI
DAVDPCLCVYPLDEWEDIEARLRALPSLREENRRLQRLIGNNVDLELDGSGRRLVPP
RIREYAKLDKRAMLVGQLNKFQLWDEDAWNAVSAADLAAIQQPGAMPDELRDLIL"
                                                                                                                                                                                                                                                                                                 /translation="mcavtdvagaskstvgtlxvvatpignlddmsaralkvladval
IAAEDTRHSIRLLQHFGIDTPLAACHEHNERDEGGRFLSKLLAGENVALVSDAGTPLI
SDPGYHLVRQARAAGVSVVPVPGACALIAALSAAGLPSDRFIFEGFLPAKQAGRRARL
                                                                                                                                                                                                                                                                                                                                                                                                         EQVREEPRTIIFYEAPHRILECLEDMBAVFGGDRPALLARELTKTFFFIKGLPLAELR
AFVAGDSNQORGECVVLVGGWSAPEGBQAISAEAQRVLDLLLAELPLKRAAALAAEIT
GVRKNLLYQLALEKQKAE"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Ø
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             SKLGPOGRLLGFDKDPOAIATGOALAAEDGRFVIVORSFAELGAEVAARGLHGKVSGV
LIDLGVSSQPOLDDPERGFSFLNDGPLDDRNRNDPOGGSAAERFITATAPVEETRYGFERG
EERRAGRWARARVUSPREKOPPTTADLAEVIKVANPAWEKGKNPATRAPGILSTHVNN
ELGDLEAGLEAALDALEVGGRLAVISFHSLEDRIVKLFWRKLVKGEADNLPRNLPVQH
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              /translation-"MTIDSGFNHITVLLDEAVEALALRADGCYLDGTFGRGGHSRLIL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   106
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     107 CATGTCCCTGGTGCGCTACCTGGCGCGCCGCGGCTTGCCTTTCGCCGTGGTCGATACCCG 166
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 complement(5744...6164).

Locus_tag="PP1327"

/hote="This region contains a gene with one or more premature stops or frameshifts, and is not the result of sequencing artifact; conserved hypothetical protein, degenerate; similar to GB:X16944, and SP:P15488; identified by sequence similarity; putative"

/locus_tag="PP1328"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               GAGCATGAGCCTGATCGCCTCCGACCACTTCCGCATCGTTGTCGGCCTCGGCAAGAGCGG
/locus_tag="PP1326"
/note="identified by match to PFAM protein family HMM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ρχ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               /locus_tag="PP1328"
/note="identified by match to PFAM protein family HMM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      /locus_tag="PP1329"
/note="similar to GP:9950652; identified by sequence
similarity; putative"
/codon_start=1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               /product-"conserved hypothetical protein TiGR00006"
/protein_id="AAN66952.1"
/db_xref="GI:24982787"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           /iocus_tag="PP1330"
/note="similar to GB:M11186, GB:M62611, SP:P01178,
PID:189411, PID:386991, and PID:825699; identified sequence similarity; putative"
                                                                                                                                                                                     /product-"tetrapyrrole methylase family protein"
/protein_id="AAN66950.1"
/db_xref-"GI:24982784"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Length 301995;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   KVFEPKIKLIGKAQFASEAELKANPRSRSAVMRVAEKLR"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        DB 1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                61.8%; Score 895.4; DB 1;
77.2%; Pred. No. 6.3e-98;
11ve 0; Mismatches 320;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      7869. .8162
/gene="ftst"
/locus_tag="PP1330"
7869. .8162
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         6925. .7872
/locus_tag="PP1329"
6925. .7872
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       /codon_start=1
/transl_table=11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               /transl_table=11
                                                                                                                                                          /transl_table=11
                                                                                                                       /codon_start=1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            /gene="ftsL"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Best Local Similarity 77.2
Matches 1084; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     PF02381"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       47
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         à
                                                                                                    /translation-"MKCASFKEPLANSSRPYLVRALYEWIVDNDCTPHMLVNAEFPKV OVPOGFASDGOIVLAISPSAVRSLHMDNDAVSFEGRFSGVAHSLFVPVGAILGIYARE NGGOMYELEPSSMDGDELEDDDVQPDDDGPPDDGGQPPRFTGRPSLKVVK" complement (1216. .1794)
                                                                                                                                                                                                                                                                                                                                                                                                                                            /product-"lipoprotein, putative"
//product-"lipoprotein, putative"
//db_xref-"di:24982779"
//tb_xref-"di:24982779"
//translation-"MTPMRLGLMALTLCLSVTGCSSVLFSTRNSPIEDDRGTRTIGSK
//translation-"MTPMRLGLMALTLCLSVTGCSSVLFSTRNSPIEDDRGTRTIGSK
//translation-"MTPMRLGLMALTLCLSVTGCSSVLFSTRNSPIEDDRGTRTIGSK
//translation-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-large-lar
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     /translation-"MOSRIRRLFEASIETRQOAMDILAPHIEGASLVMVNALLNEGKM
LACGNGGSAGDAQHESSELLNRFERERPSLPAIALTTDSSTLTSIANDYSYNEVFSKQ
IRACGOFGODVLLAISTSGNSANVIQAIQAAHDREMIVVALTGRDGGGMASLLLPEDVE
IRVPSTYTRAIQEMILAIHGLCDLIDSQLFGSEE"
complement(2471. .2845)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             PLIGGGAASTNNDAIWALVASLPAEQIQQPTNDQTLAGWTSIAFAVKSAGTLEQQQAA
IEAWYKQHPDHPAAQQLPLAITKIKELASQPLTKIALLIPOEGPLAGVARALRDGFMA
AHFQAQQSGQPARPAVQVFDSSRIGSLDDFTKQAQAAGVQLVIGPLEKPLVKQLAAKPO
LPITTLAINYADAGQKAPPQLEQFGLAAEDBAREVARRARADGMYRAYALVPSGEWGD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   RVLAAFRQDWEGNGGTLLAAERIAOPVALAQQIADLFQLRQSEGRAKSLQSTVGGSIA
AQSBRQDIDDIDFILASTPQQQAQQIKPURQYABQDVYYATSNLYSASGDINQYNDMN
GIRFCETPMLLDYSRLRQQVVQQRPQAAGSLGRIYAMGVDAYSLAPRLGGLKALPDN
RVLGLSGSLSINANQRVERQLPWAEFSGGQVKRLPDTVR"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       KAASSKSAEDAALLRLSAADLAYKQKDFPRAARILEQVPLDTIKPAQQVFASTLAAEL
AMSRNQPKAALTALAHPSLQRLAELPADLQARTYSVHAAALEADGQALAAAQQRILLA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 /translation="mmaaaSPTRAGQAAETQALEYLQGQGLQLLARNWRCKGGELDLV
MLDADTVVFVEVRYRLHAGFGGALDSIDGRKQKRLVLAATLFLQKEAHWGNYPCRFDV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 /translation="MIACLRLLTALCLAALLAACASSPSSSLGELPRTPDASIEQLLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         complement(2471. .2845)
/locus_tag="PP1324"
/note="identified by match to TIGR protein family HMM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           /locus_tag="PP1323"
/note="ldentified by match to PFAM protein family HMM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 /product-"conserved hypothetical protein TIGR00252"
/protein_id-"AAN66948.1"
/db_xref-"GI:24982782"
           /product="stringent starvation protein B"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             /product-"phosphoheptose isomerase"
/protein_id-"AAN66947.1"
/db_xref-"GI:24982780"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     /product-"lipoprotein, putative"
/protein_id-"AAN66949.1"
/db_xref-"GI:24982783"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              VALOGSHHAGRPLOWLKNAFEC
Complement(2842, 4659)
Alocus_tag="pp1325"
complement(2842, 4659)
Alocus_tag="pp1325"
                                      /protein_id="AAN66945.1"
/db_xref="GI:24982778"
                                                                                                                                                                                                                                                                                             complement(1216. .1794)
/locus_tag-"PP1322"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      complement(1791. .2378)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    /locus_tag="PP1326"
4837. .5721
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               /locus_tag="PP1323"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          /locus_tag="PP1324"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           /codon_start=1
/transl_table=11
                                                                                                                                                                                                                                                                                                                                                                                                                    /transl_table=11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              /transl_table=11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      /transl_table=11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           /codon_start=1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               /codon_start=1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 /gene="gmhA"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                /gene="gmhA"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     TIGR00252"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     PF01380"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 gene
                                                                                                                                                                                                                               gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           CDS
                                                                                                                                                                                                                                                                                                     CDS
```

QY         1247 AACGCTGGACGAAGCATCCGGCAGGCTGGCCGCGAAGGCGATGCGTGCT 1306           Db         15039 GACGCTTGACGATGCCGTACAGCAGCTGCCCAACTGGCCGGCGATGCCGTGCT 15098           QY         1307 GTTGTCGCCGGCCTGCGCGGACCTGGACTTCGAAGAACTGCGGGAAGCGGGACGCCT 1366           I	AE016871/c AE016871 311600 bp DNA linear BCT 05-MAR-2003 LOCUS DEFINITION Pseudomonas syringae pv. tomato str. DC3000 section 16 of 21 of the ACCESSION AE016871 AE016853 VERYNORDS SOURCE Pseudomonas syringae pv. tomato str. DC3000 ORGANISM Pseudomonas syringae pv. tomato str. DC3000 ORGANISM Pseudomonas syringae pv. tomato str. DC3000	Bacteria; Proteobacteria; Gammaproteobacteria; Pseudomonadales; Pseudomonadaceae; Pseudomonas.  REFERENCE 1 (bases 1 to 311600)  AUTHORS Buell, R., Joardar, V., Khouri, H., Fedorova, N., Tran, B., Russell, D., Berry, K., Utterback, T., Van Aken, S., Feldblyum, T., Gwinn, M., Dodson, R., DeBoy, R., Durkin, A., Kolonay, J., Madupu, R., Daugherty, S., Brinkac, L., Beanan, M., Haft, D., Selengut, J., Nelson, W., Davidsen, T., White, O., Fraser, C. and Collmer, A.	NAL NCE ORS	AL S urce	/note="pathovar: tomato"  131. 601 /gene="bfr" /locus_tag="PSPT04160"  131. 601 /gene="bfr" /locus_taf="PSPT04160" /note="similar to SP:P22759; and SP:P22759; identified by sequence similarity; putative" /codon_start=1 /transl_table=11 /product="bacterioferritin"	/protein_id="AANO57616.1" /db_xref="G1:28854553" /db_xref="G1:28854553" /db_xref="G1:28854553" /db_xref="G1:28854553" /db_xref="G1:28854553" /db_xref="G1:28854553" /db_xref="G1:28854553" /db_xref="G1:2885858128512871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871091871
167   AGAGAACCGGCGGGCCCCGGGGGCCCCGGTATCCGCGGGGGGAAGTGCGTTG   226   11   1   1   1   1   1   1   1   1	09         407 GAAGAGCACCTGACCTGGTGGGCGAAATGGCGTGGCCGGGACAAGCTGTCGC 466           14199 CAAGAGCACCTGCTGGTGAATTGCCGTGCCGCAAACGCTGGC 14258           09         467 CGTCGGCGCAACCTCGGCGCTCGACCTGCTGGCCGACGACGTGTA 526           14259 CGTGGCGCAACCTCGGCACCTCGACCTGCTGCCGACGACGTGTA 14318           09         527 CGTGTGGCGTCCACCTGCACTTCGACCTGCTGCTGTGACGCTGTA 14318           09         527 CGTGTGGGCTCCACCTCGGAACCTCGGAATCGCATCGACGCCGAGGTGC 586           11	DD	707 CCTGACCGGACCGCTGATCGCTGCTGCTGGTCGTTCGGCTGAACAAGCC	2022	QY         947 GCTGAAGGCGTTTTCCGGCCTGGCTACTGCTGCGAGGGGTACGCGAGGGGCGT 1006           II	QY         1127 CGATTTCCATGACCTGCGCGAGCGGTCGCGGCGGGGGGGG

gene

CDS

```
LRAIAGFEPIHAGEITLAGDVISRPGWTLAPEKRRIGMVFQDYALFPHLSVADNIAFG
IRQHPRLDQVIGELLELVNLGALGKRYPHELSGGQQQRVALARALAPEPPULLLDEPF
SNLDGELRRRLSHEVRDILKARGTSATLYTHDGEEAFAVSDHVGVFKEGRLEQWDTPY
NLYHEPGYTPPVASFTGGGYFTRGGMTEPESVHTELGYLKGNRAYPGYRGSAVDVLLRP
DDIVYAPDSDLKARVIGRTFKGASTLYRLQLPTGSQLEAIFPSHADHRQGEEVGIRVA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         /ransl_table=11
/product="qlycerol.uptake facilitator protein"
/product="qlycerol.uptake facilitator protein"
/protein_id="AAO57623.1"
/db_xref="cf:2854560"
/translation="MTIALKQPTLTGQCVAEFLGTALMIFFGTGCVAALKVAGATFGLWEINWGMAYSMGIYLSAGISGAHLNPAVSTALSLEAGFERKLPFFISAQIAGFG
GAGLYLLISISFPEPEMAHILIGSEQSLELASVESTYPNPAISVGQAFLVEUVITT
ILMGVTMALGDDNMGERGAALAFLIGGLLVAVIGSAMGPLTGFAMNPARDFGPKLMFF
FAGWGEIAFTGGRDIPYFLVPIFPAPILGACLGAAGYRALIARHLPSTVTVENEKEAPV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 /translation="MTPALDLLKKNRAEHRIHSYEHDPKAASYGLEAAEKLGLDAARV
KTLLASTEKGELLVAVVPVGTLDLKALANAAGAKKTEMADPAAAQRSTGYLLGGIS
PLGGKKRLRTFIDETAQLFESIYVSAGRRGLEVELTAAVLAEHTQARFAPIGRE"
6918.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            /translation="MIDTQNKNYIIALDQGTTSSRAIIFDRDANVSTAQSEFVQHYP
QAGWVEHDPWEIFATQTACMTKALAQADLHHDQIAAIGITNQRETTVIWERDTGRPIY
NAIVWQCRRSTEICQQLKRDGLEEYIKDTTGLVLDPYFSGSKVKWILDHVEGSRERAR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     PEVKSSSEVYGHSKSGIPIAGIAGDQQAALFGQMCVEPGQAKNTTGTGCFLLMNTGKK
AVKGAHGMITTIGCGPRGEVAYALEGAVFNGGSTVQWIRDBLKLINDLDTEYFAGKV
KDSNGVYLVPAFTGLGAPYMDPYARGALFGLTRGVKVDHIIBALESIAYQTRDVLDA
MQQDSGBRIKSLRVGGGAVANNFLMQFQADILGTHVRRPQMRETTALGAAFLAGLAIG
FWSSLDELRNKAVIERVFEPACEEAHREKLYAGWQKAVARTRDWEPHENEE"
                                                                                              /translation-"MLLNLRNLACGYQNQRVVQDLNLHLNAGDIGCLLGSSGCGKTTT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           KGELMFGTIDTWLIWKFTGGKVHVTDYTNASRTMLFNIHTLEWDQRMLDVLDIPREIL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   /locus_tag="PSPT04168"
/note="identified by match to PFAM protein family HMM
                                                                                                                                                                                                                                                                                                         complement(6096...6566)
/locus_taq="PSPT04166"
complement(6096...6566)
/locus_taq="PSPT04166"
/note="similar to SP:P21484; identified by sequence spinilarity; putative"
/codon_start=1
/transl_table=11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         /locus_tag="PSPT04167"
/note="similar to SP:P11244; identified by sequence similarity; putative"
/codon_start=1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     /locus_tag="PSPT04169"
/note="similar to SP:051391; identified by sequence
similarity; putative"
   /product-"ABC transporter, ATP-binding protein"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  /product-"ybak/ebsc protein"
/protein_id="AAO57622.1"
/db_xref-"GI:28854559"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                /product-"glycerol kinase"
/protein_id-"AAO57624.1"
/db_xref-"GI:28854561"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 /locus_tag="PSPTO4167"
6918. 7775
/gene="glpF"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           /locus_tag="PSPTO4168"
7805. .9310
/gene="glpK"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      /locus_tag="PSPTO4169"
9421. .10176
                                                                                                                                                                                                                                                                                      ADHLVLFAAQGSVAAYAAG"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         /codon_start=1
/transl_table=11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             6918. .7775
/gene="glpF"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                7805. .9310
/gene="glpK"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     9421. .10176
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               /gene="glpR'
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        /gene="qlpR'
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      VRGKVQASS"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     PF02782"
                                                                                                                                                                                                                                                                                                                   gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     gene
                                                                                                                                                                                                                                                                                                                                                                                 CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    /LTAIG 3 LA 100-
MARVIARHSHCSAIHRIAMTRPEAAMTRTOHLRACHLCEAICG
LAIETVTEPGAAPKITSIKGDPLDTFSRGHICPKAVALQDIQNDPDRLRQPMLRTGDQ
WQPIERQAAFDLVAERLYAIQQHQQNAQYAYOFORSYHNYGLMTHSYYELGLIKTRN
RRSATSVDQLPHHLTSFLWAGGMLLPIPDIDHTDFMLILGGNPLASNGSIMTVPDVE
RRLKAIQQRGGKLLVVDPRRSETAAIADQHVVRYRPGGDAALLFGLLWTLFEEGLTRES
HLPVDGLDHVRHSIAGFSAEAMSPRCGIAAVQIRQLRAGAALLFGLLWTLFEEGLTRES
FGTLCHWLAGAGGVRLVYRORLDRYGGTLCTEPAVDLVSSTSGGBFRVWGSRYSGLPEGE
ELPVSALAEEMLVEGGGGVRALVYTAGNPVLSTPRGRQLDGALEGLEFMLSIDLYINE
TTRHADLILPSTSALEENDHYDTTRATANRWTRFNRAIEDREGGLHDWEIFYGLA
SFAAKAQRELKPTVPPAQMIDRVLRAGRYGAASPHNLSLETLASHPHGMDLGALKPUL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        /product="conserved hypothetical protein"
/protein_id="AAO57619.1"
/protein_id="C1:288845619.1"
/b_xref="C1:288845619.1"
/translation="MDSKEHQLFLGLTARTLTHLTASMTSMSFELLRSEDEVTRNAGRRWIDDAMATISSGLDEHWRLIGDLTGIHMAQEQVETVTEIQLQRKIVTPIGG"
                                                                                                                                                                                                                 /translation="MDIIETIKEQIASNTILLYMKGAPNAPQCGFSAKASQALMACGE
KFAYVDILQNPEIRANLPKYANWPTFPQLWVAGELVGGSDIITEMMADGSLQTLVKEA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    /translation="MnarhflsmmDyTpDellGlirrgvelkdlrnrgvlfeplknrv
LGMIFEKSSTRTRLSFEAGMIQLGGGAIFLGHRDTQLGRGEPIADSAKVISRMLDAVM
LTYAHDINLTEFAANSRVPVINGLSDDLHPCQLLADMOTFLEHRGSIKGKTVANATGDG
NNMONSYIEAAIQFPCLRVAGVEGYEPNPFEFLALAGERVTVVRDPKAAVAGHLVST
DVWTSMGQEEFTARRALFAFQVTRALLDLADKDVLFMHGLEPISVDLLDDA
RSVAWDQAENRLHAQKALLFFLVAFCFQPA"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           HRLVKGKPRHQLLMHPDDLSHRGLSDGQQVRVSSRVGVTEVEVLGSLDMMPGVVSLPH
GWGHSRSGVKMEIARNQPGVSANDLTDERQLDELSGNAALNGVPVQVASC"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     TDRLKTANGRIQAAPEVIMADLVRFAADAGPRFGEKAGQLLLIGRRHVRSNNSWMHNY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 /locus_tag="PSPT04165"
/note="similar to GB:248042, SP:Q14444, and PID:662994;
identified by sequence similarity; putative"
/note="identified by match to TIGR protein family HMM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               /iocus_tag="PSPT04164"
/note="identified by match to PFAM protein family HMM
                                                                                                                                                                                                                                                                                                                                                                                                           /note="similar to GP:5441785; identified by sequence similarity putative" /codon_start=1 /transl_table=11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  /product="oxidoreductase, molybdopterin-binding'
/protein_id="AAO57618.1"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            /product="ornithine carbamoyltransferase"
/protein_id="AAO57620.1"
/db_xref="GI:28854557"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     complement(3357. .3650)
/locus_tag="PSPT04163"
/note="identified by Glimmer2; putative"
                                                                                                                     /product="glutaredoxin-related protein"
/protein_id="AAO57617.1"
/db_xref="GI:28854554"
                                                                                                                                                                                                                                                                                                                                          /locus_tag="PSPTO4162"
complement(1104. 3302)
/locus_tag="PSPTO4162"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             complement(3357. .3650)
/locus_tag="PSPTO4163"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          locus_tag="PSPT04164"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                /db_xref="GI:28854555"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         locus_tag="PSPTO4165"
                                                                                                                                                                                                                                                                                                                   complement(1104.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       /codon_start=1
/transl_table=11
                                                                                              /transl_table=11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 /codon_start=1
/transl_table=11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   /codon_start=1
/transl_table=11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 4100. 5020
/gene="argf"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           4100. .5020 /qene="arqF"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  5026. .6087
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                PF02729".
```

gene

gene

CDS

gene

CDS

CDS

```
PQLAAALMKDVIAEPYRARLLPGFSQARQAVSEIGALASGISGSGPTLFALCDKPETA
QRVADWLSKHYLQNQEGFVHICRLDTAGARVVG"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            /db_xref-"SPTEMBL:0829R6"
/db_xref-"SPTEMBL:0829R6"
/translation="kKLYNLKDHNEDVSFAQAVTQGLGKQQGLFFPHDLPEFSLTEID
BANDOPVSKSAKILSAFIGDBIPQQLLERVRAAFAFPAPAVQVESDVGCLELFHGP
TLARKDFGGRFWAQULTHISGORFWTILLTATGGDTGAAVAHAFYGLENVRVTLYPRG
KISPLQEKLFCTLGGNIETVAIDGDFDACQALVKQAFDDEELKTALGLNSANSINISR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            LIAQICYYEBAVAQLEOGARNOLVISYPSGURGDITAGLARSLGLEVKRFIAATNIN
DTVPRFLHDGKWAPKATQATLSNAMDVSQPNNWPRVEELFRRKIWRLTELGYAAVDDT
TTQQPWEELKAKGYISEPHAAVAYRALRDQLNRGEYGLFLGTAHPAKFKESVESILGE
TLALPEALAERADLFLLSHHLPADFAALRKLMMTRQ"
3962. 4867
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      /note="Orthologue of E. coli thrC (THRC_ECOLI); Fasta hit to THRC_ECOLI (428 aa), 93% identity in 428 aa overlap" /codon_start=1 /transl_table=11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            complement(5114. .5887)
/gene="STY0005"
/note="Orthologue of E. coll yaaA (YAAA_ECOLI); Fasts hit
to YAAA_ECOLI (258 aa), 86% identity in 257 aa overlap"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         /note="Similar to Bacillus subtilis amino acid carrier protein alst ALST SW:kLST_BACSU (Q45068; P40743) fasta scores: E(): 0, 45.3% id in 477 am, and theromonas haloplanktis nat+)-linked b-alanine glycine permease DAGS SW:DAGA_ALTHA (P30144) fasta scores: E(): 0, 36.5% id in
                                                                                                                                                                                            3068...3103
/gene="STY0003"
/note="SSY00627 GHMP kinases putative ATP-binding domain"
3734...5020
/gene="STY0004"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Orthologue of E. coli yaaJ (YAAJ_ECOLI); Fasta hit to YAAJ_ECOLI (476 aa), 76% identity in 476 aa overlap"
                                                                                           //onte="Pfam match to entry PF00288 GHMP_kinases, GH
/inases putative ATP-binding proteins, score 79.20,
E-value 5.7e-21"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  /Jobse="Pram match to entry PF00291 PALP,
Pyridoxal-phosphate dependent enzyme, score 104.50,
E-value 2e-27"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          //octe-"PS00165 Serine/threonine dehydratases pyridoxal-phosphate attachment site" /gene-"STY0005"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  /product-"threonine synthase"
/protein_id-"CAD01157.1"
/db_xref-"GI:16501287"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               /note="synonym: yaaJ"
complement(5966. .7396)
                                                                                                                                                                                                                                                                                                                                  /note="synonym: thrc"
3734. 5020
/gene="STY0004"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            /note="synonym: yaaA"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        /codon_start=1/transl_table=11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         YAAJ_ECOLI (476 & /codon_start=1 /transl_table=11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        4022. .4066
/gene-"STY0004"
                                                           3005. .3196
/gene="STY0003"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  3962. .4867
/gene="STY0004"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   /gene="STY0006"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        /gene="STY0006"
                                                                 misc_feature
                                                                                                                                                                                                     misc_feature
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       misc_feature
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           misc_feature
                                                                                                                                                                                                                                                                                       gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            CDS
                                                                                                                                                                                                                                                                                                                                                                       CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   /db_xref="SPTREMBL:0029R7"
/translation="WRVLKFGGTSVANAERFLRVADILESNSRQGQVATVLSAPAKIT
NHLVAHIETSTGODALPNISDBARIFSDLLAGLASADGEFLARKAWVEGEFRQIK
NHLVAHIETSTIGGOPDALPNISDBARIFSDLLAGLASADGEFPLARKAWVEGEFRQIK
NHLVAHIETSTGOCPDSINAALICRGEKASIAINAGLLEARGHRYTVIDPVEKLLAVGHY
LESTVDIAESTRRIAASQIPADHMILMAGFTAGNEKGELVVLGRNGSDYSAAVLAACL
RADCCENTPODGOYTCDPRQVPDARLKSMSYQEAMELSYFGGKVLHPRTTPIAGF
QIPCLIKNTGNPQAPGTLIGASSDDDNLPVKGISNLNNMAMFSVSGFGKKGMIGMARR
VFAMSRAGISVULTQSSEYSISFCVPQSDCARRRAMQDEFYLELKGGLLEPLAV
TERLAIISVYGDGKRTLRGISAKFFRALARNININAIAQGSSERSISVVNNDDATT
GVRUMLFNTDQVIEVYGGGGGGGARLEQLKRQOTWLKNKHIDLRVGGANBKR
LLTRVHGLMLDNWQARLAQDARAFRICKLINFYTHUNGTUSGQANBKR
LLTRVHGLMLDNWQARLAQDARAFRICKLINFYTHUNGTSSGQANBCH
LLTRVHGLMLDNWQARLAQDARAFRICKLINFYTHUNGTSSGQANBCH
LLTRVHGLMLDNWQARLAQDARAFRICKLINFYTHUNGAGLPVIENLONLLN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             /db_xref-swiss-prot:08xgps"
/translation="WKVYAPASSAMMSVGFDVLGAAVTPVDGTLLGDVVSVEAADHF
/translation="WKVYAPASSAMMSVGFDVLGAAVTPVAMTLERNMPIGSGLGSSACS
RVAALVAAMNEHGGKPLDVPTRLLALMGELEGRISGSHISDNYAPCFLGGMQLMIEBNG
ISQQVPGFDEWLWVLAYPGIKVSTAEARAILPAQYRRQDCIAHGRHLAGFIHACYSRQ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      AGDELOKFSGILSGSLSFIFCKLEEGMSLSOATALAREMGYTEPDPRDDLSGMDVARK
LLILARETGRELELSDIVIEPVLPDEFDASGDVTAFMAHLPQLDDAFAARVAKARDEG
KVLRYVGNIEEDGVCRVKIAEVDGNDPLFKVKNGENALAFYSHYYQPLPLVLRGYGAG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    /gene="STY0002"
/note="Orthologue of E. coll thrA (AKIH_ECOLI); Fasta hit
to AKIH_ECOLI (820 aa), 94% identity in 820 aa overlap"
/codon_start=1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Homoserine dehydrogenase, score 535.60, E-value 3.4e-157"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      /note="Orthologue of E. coll thrB (KHSE_ECOLI); Fasta hit to KHSE_ECOLI (310 aa), 94% identity in 30% aa overlap"
                                                                                                                                      /note="Orthologue of E. coli thrL (LPT_ECOLI); Fasta hit to LPT_ECOLI (21 aa), 86% identity in 21 aa overlap" /codon_start=1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   /note="Pfam match to entry PF00696 aakinase, Amino acid
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           /product="aspartokinase I/homoserine dehydrogenase I"
/protein_id="CAD01155.1"
/db_xref="GI:16501285"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   note="PS01042 Homoserine dehydrogenase signature"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            note-"Pfam match to entry PF00742 Homoserine_dh
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         343, 369
/gene="STY0002"
/note="PS00324 Aspartokinase signature"
                                                                                                                                                                                                                         /transl_table=11
/product="thr operon leader peptide"
/protein_id="CAD01154.1"
                                                                                                                                                                                                                                                                                                                             /db_xref-"SPTREMBL:Q8X612"
/translation-"MNRISTTITITITITIGNGAG"
337. .2799
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        'product="homoserine kinase"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            /protein_id="CAD01156.1"
/db_xref="GI:16501286"
                                                                                                                                                                                                                                                                                                           /db_xref="GI:16501284"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        NDVTAAGVFADLLRTLSWKLGV"
190. .255
/gene="STY0001"
/note="synonym: thrL"
                                                                                                                                                                                                                                                                                                                                                                                                                                                  /note="synonym: thrA"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         note="synonym: thrB"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  /transl_table=11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         /transl_table=11
                                                                                                               /gene="STY0001"
                                                                                                                                                                                                                                                                                                                                                                                           337. .2799
/gene="STY0002"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         .819. .2781
'gene="STY0002"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     2801. .3730
/qene="STY0003"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        2801. .3730
/gene="STY0003"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            'qene="STY0002"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     2314. .2382
/gene="STY0002"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  codon_start=1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         1819.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     misc_feature
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         misc_feature
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            misc_feature
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     misc_feature
     gene
                                                                                                                                                                                                                                                                                                                                                                                              gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        gene
                                                                                     CDS
```

CDS

149824

1085

149770

1025

149998

1325

1385

149944

ð

δ

ò

ò

δ

δ

ð

1205

149884

```
300169 bp DNA linear BCT 21-MAR-2003 Salmonella enterica subsp. enterica serovar Typhi Ty2, section 1 of 16 of the complete genome.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Salmonella enterica subsp. enterica serovar Typhi Ty2
Salmonella enterica subsp. enterica serovar Typhi Ty2
Bacteria: Proteobacteria; Gammaproteobacteria; Enterobacteriales;
Enterobacteriaceae; Salmonella.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Strains
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    /organism="Salmonella enterica subsp. enterica serovar
Typhi Ty2"
                                                                                                                                                                                                                                            GGCAAGCTGGTGCTCGCCGGCGGAGACGGCAAGGGCGCCCGATTTCCATGACCTGCGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 1326 AGCCTGGACATGTTCAAGAACTTCGAAGAACGCGGACGCCTGTTCGCCAAAGCCGTAGAG
                                                                                                                                                                        149885 cccrarcraccegecarcerarccecricrarscriregececeargececacir
                                                                                                                                                                                                                                                                                                                                                                                                                                           1266 CGGCAGGCCGCCGAGCTGGCCCGCGAAGGCGATGCGGTGCTGTTGTCGCCGGCCTGGCGC
                                                                                                                                                   1026 AAGGCCACCAACGTCGGCGCCCCTGGCGGCGATCGAGGGGCTGGGTGCCGACATCGAC
                                                                                                                                                                                                                                                                                             1146 GAGCCGGTCGCGCGCTGCTGCGGGCGTGGTACTGCTTGCCCGTGACGCCGGGCTGATT
                                                                                                                                                                                                                                                                                                                                                                     GCCCAGGCACTGGGCAACGCGGTACCGCTGGTGCGCGTCGCAACGCTGGACGAAGCAGTC
     GGCCATGCGGTCGGCCTGCCGTTCGACGCCATGCTCGGCGCGCTGAAGGCGTTTTCCGGC
                                                                             CTGGCTCATCGCTGCCAGTGGGTACGCGAGCGGCAGGGCGTGAGCTACTACGACTTCC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                (bases 1 to 300169)
Dengy W., Liou,S.-R., Plunkett,G. III, Mayhew,G.F., Rose,D.J.,
Dengy W., Liou,S.-R., Plunkett,G. III, Mayhew,G.F., Rose,D.J.,
Burland,V., Kodoylanni,V., Schwartz,D.C. and Blattner,F.R.
Direct Submission
Submitted (25-SEP-2002) Laboratory of Genetics, University of
Wisconsin - Madison, 445 Henry Mall, Madison, WI 53706, USA
Location/Qualifiers
1. 300169
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    1 (bases 1 to 300169)
Dengy, Liou,S.R., Plunkett III,G., Mayhew,G.F., Rose,D.J.,
Burland, V. Kodoyianni,V., Schwartz,D.C. and Blattner,F.R.
Comparative Genomics of Salmonella enterica Serovar Typhi Str
Ty2 and CT18
J. Bacteriol. 185 (7), 2330-2337 (2003)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   /serovar="Typhi"
/sub_species="enterica"
/db_xref="taxon:209261"
190. .255
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 /mol_type="genomic
/strain="Ty2"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            AE016834 AE014613
AE016834.1 GI:29136167
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         1386 GAGCTAGCGTGATGC 1400
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                12644504
                                                                                                                                                                                                                         1086
                                                                                                                                                                                                                                                                                                                                                                     1206
       906
                                                                             996
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              RESULT 6
AE016834
LOCUS
DEFINITION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ORGANISM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               MEDLINE
PUBMED
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        TITLE
JOURNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ACCESSION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    REFERENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        AUTHORS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        AUTHORS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          VERSION
KEYWORDS
SOURCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   REFERENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             JOURNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          TITLE
                                                                                                                                                                               a
                                                                                                                                                                                                                       à
                                                                                                                                                                                                                                                   qq
                                                                                                                                                                                                                                                                                       δ
                                                                                                                                                                                                                                                                                                                           g
                                                                                                                                                                                                                                                                                                                                                                     ö
                                                                                                                                                                                                                                                                                                                                                                                                   g
                                                                                                                                                                                                                                                                                                                                                                                                                                         à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ద
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         à
                                   a
                                                                           δ
                                                                                                        g
                                                                                                                                             õ
/product="putative amino-acid transport protein"
/protein_id="CaD01159.1"
/db_xref="G1:16501289"
/db_xref="G1:16501289"
/db_xref="G1:16501289"
/db_xref="G1:16501289"
/db_xref="G1:16501289"
/db_xref="G1:16501289"
/db_xref="G1:16501289"
/db_xref="G1:16501289"
/dranslation="MPEFFSFINEILMGSVMIYLLIGAGCWFTWRTGFIQFRYIRQFS
RSILKGSLESPORGITSFQALCTSLARIGGSNALAYAGIAAAGGGPAVFWMYSAIIG
MATSFABCSLAQLYKERDPTGGFRGGPAMYMAGGGRARWMGVYFALFLLAVAYGILFNS
VQANAVSRALHFARNIPPLISGIALAFCALLIIIRGHRGVARLMQMILPLALLWAGGSVGANGSSTGGIQ
STPNAAAATSYPPHPVAQGIVQMIGVFSOTTIICTASAMIILLAGRNASHEAGMG
STPNAAAATSYPPHPVAQGIVQMIGVFSOTTIICTASAMIILLAGRNASHEAGNG
LLQHAWYSLTGEWGASSFVALVILFEFSSIVANYIYABENNLFFIRLHNAKAIWILKLA
TLGMVINGTLISFPLIWQLADMIMACMAITNLTAILLLSPVVYTLAGDYLRQRKIGVR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            149000 CICITAGCGGCGGAITTAAICGICGCCAGCCCTGGIAITGCTCTGGCGCAICCTCTT 149059
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               149479
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        148829 GACAAAAACGTCGTCATTATCGGTCTGGGCTTAACCGGACTCTCTTGCGTGGACTTTTTT 148888
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                148999
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        149060 AGCGCTGCCGCCAGCGCTGGAGTGGAAATTGTCGGCGATATCGAACTGTTTTGCCGCGAA 149119
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          149239
                                                                                                                                                                                                                                                                                                                                                                                                                                                          248
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 845
                                                                                                                                                                                                                                                                                                                                                                                      GCGCGCCGCGCGCTTGCCCTTTCGCCGTGGTCGATACCCGAGAGAACCCGCCGGAGCTGGCC 188
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  308
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      GTACAGGCCGCCGCGAAAGGCGTGCGCATCTCCGGTGACATCGATCTTTCGCCCGCGAG 368
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              428
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      488
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              548
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    809
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           665
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   TTCCGCGGGGCCCGCCAGGTCGTGGTGAATCGCGCCGATGCCCTGACCCGACCGCTGATC 725
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         785
                                                                                                                                                                                                                                                                                                                                                                                                                                                                               CTCGCCCGCGCGTGACGCCGCGGGTGATGGATACTCGCGTGACGCCGCGGGTCTGGAT
                                                                                                                                                                                                                                                                                                                GACCACTTCCGCATCGTTGTCGGCCTCGGCAAGAGCGGCATGTCCCTGGTGCGCTACCTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                            ACCCTGCGTGCCCAGTATCCGCAGGTGGAAGTGCGTTGCGGCGAACTCGACGCCGAGTTC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                CTCTGCTCCGCCCGCGAACTCTATGTCAGCCCCGGCTTGTCGCTGCGCACCCCTGCGCTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    CAGCTGGAAACCTGCGATCGCCTCAACGCCGAGGTGGCGACCGTGAACGTCAGCGAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           GACCATATGGATCGCTA - - - CGACGGCATGGCTGACTACCACCTGGCCAAGCACCGGGTC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        CTGATCGAGGAAGACGCCAGAAGTGGCTGGCGTTCCAGTTCGACAAGCTGCTGCCGGTT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              GCGAAGGCCCCGATCGTCGCCATCACCGGTTCCAACGCGAAGAGCACCGTGACCACCTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      GTGGGCGAAATGGCGGGTGGCCGCGGGACAAGCGTGTCGCCGTCGGCGGCAACCTCGGCACC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            GCCGATACCGTGCCGTGCTCGTCGGCCTGAACAAGCCGGACTTCAAGGCTTTCGGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         GGCGAACTGAAGATCCGTGGCGCCCACAACTATTCCAACGCGCTCGCCGCTGGCGCTG
                                                                                                                                                                                                                                                                              Gaps
                                                                                                                                                                                                                                      Score 335.8; DB 1; Length 251050;
Pred. No. 1.5e-31;
0; Mismatches 552; Indels 33;
                                                                                                                                                                                                                                      23.2%;
sl Similarity 56.2%;
750; Conservative
                                                                                                                                                                                                                                        Query Match
Best Local S
Matches 750
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    429
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  549
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 999
                                                                                                                                                                                                                                                                                                                                                                                    129
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            148949
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        149180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            489
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      309
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           609
                                                                                                                                                                                                                                                                                                              69
                                                                                                                                                                                                                                                                                                                                                                                                                                                            189
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                249
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              369
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         726
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               786
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   149531
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         846
                                                                                                                                                                                                                                                                                                                                                                                                                        148889
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  qq
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  a
                                                                                                                                                                                                                                                                                                                                              셤
                                                                                                                                                                                                                                                                                                                                                                                  ò
                                                                                                                                                                                                                                                                                                                                                                                                                    g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ŏ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              οy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          οy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ŏ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      qq
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               g
```

CDS

gene

CDS

```
/product="conserved hypothetical protein"
/product="conserved hypothetical protein"
/protein_id="AAO67739_1"
/d=xref="col:291361739_1"
/translation="MILLISPAKTLDYQSPLATTRYTQPELLDHSQQLIQQARQLSAP
QISRLMGISDKLADLNATRFHDWQPHFTPDNARQAILAFKGDYYTGLQAETFNDADFD
AAQQHRANISGLYGVLRPLDAMQPYRTEMGIRTENERPRGKDLYQFWGDITTDKLNEALE
AQGDRYVVNIASEEYEKSVRFKLDAELIKPYFLDERNGKFKVVSFYAKKARGLMSRF
IIENRLTKPEQLIAFDREGYFFDEETSTQDELVFKRYEG"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 VQANAVSRALHTAFNIPPLISGIALAFCALLIIIRGIKGVARLMQMLIPLIALLWVAG
SVFICLWHIEDMPGYLASIYKSAFGMOEAAAGAAGYTLTQAJTSGFORGWESNEAGMG
STPNAAAAATSYPPHVVAQGIVQMIGVSDTIIITAGNHSHSTEGIQ
LLQHAWYSLTGEWGASTVALLYIIFRFSSITANYITAENNLFFLRLHNARAIWLRLA
TLGMVIAGTLISFPLIWQLADMIMACMAITNLTAILLLSPVYYTLAGDYLRQRKLGVR
7665. 8618
/gene="talb"
EMLNOPEVSRSAKILSAFIGBEIPQQILEERYRAAFAPPAPYAQVESDVGCLELFHGP
TLAFKDFGGRFMAQMLTHISGDKPVTILTATSGDTGAAVAHAFYGLENVRVVILYPRG
KISPLOEKLFCTLGGNIETVALDGDPDACQALVKQARDDEELKTALGLNSANSINISR
LLAGICYYFRETVAQLPQGARNQLVISVPSGNFGDLTAGLLAKSLGLPVKRFIAATNIN
DTVPRFLHDGKWAPRATQATLSNAMDVSQPNNWPRVEELFRKIWHTTELGYAAVDDT
TTQQTMRELKAKGYISEPHAAVAYRALRDQLNPGEYGLFLGTAHPAKFKESVESILGE
TLALFEALAERADLFLISHHLPADFAALRTMMTRQ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        /product="putative amino-acid transport protein"
/protein_id="AAO67740.1"
/db_xref="G1:2913673"
/translation="MPEFFEINEILMGSVMIYLLLGAGCWFTWRTGFIQFRYIRQFS
RSLKGSLSPOPEGGTFSPQALCTSLARRIGSGNIAGYAGAGGGANFWMWYSAIIG
MATSFAECSLAQLYKERDPTGQFRGGPAWYMARGLGARRWMGVVFALFLLVAYGLIFNS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 IPEYRKLIDDAVAWAKQQSSDRAQQVVDATDKLAVNIGLEILKLVPGRISTEVDARLS
YDTEASIAKAKRIIKLYNDAGISNDRILIKLASTWQGIRAAEQLEKEGINCNLTLLFS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        /translation~"MTDKLTSLRQFTTVVADTGDIAAMKLYQPQDATTNPSLILNAAQ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           FAQARACAEAGVYLISPFVGRILDWYKANTDKKDYAPAEDPGVVSVTEIYEYYKQHGY
ETVVWGASFRNVGEILELAGCDRLTIAPALLKELAESEGAIERKLSFSGEVKARPERI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          /locus_tag="t0006"
/note="corresponds to STY0006 from Accession AL513382:
Salmonella typhi CT18"
                                                                                                                                                                                                                                                                                                                                                                                          STY0005 from Accession AL513382:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             STY0007 from Accession AL513382:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         FEAEFLWQHHQDPMAVDKLADGIRKFAVDQEKLEKMIGDLL"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  /product-"transaldolase B"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              /protein_id="AAO67741.1"
/db_xref="GI:29136174"
                                                                                                                                                                                                                                                                        /locus_tag="t0005"
complement(5114. .5887)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                complement(5966. .7396)
                                                                                                                                                                                                                    complement(5114. .5887)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   complement(5966. .7396)
                                                                                                                                                                                                                                                                                                                                                        //ocus_tag="t0005"
/note="corresponds to Salmonella typh1 CT18"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              /locus_tag="t0007"
/note="corresponds to Salmonella typh1 CT18"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     /locus_tag="t0007"
7665. .8618
/gene="talB"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         /locus_tag="t0008"
8729. .9319
/gene="mog"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       /locus_tag-"t0006"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               /locus_tag-"t0008"
                                                                                                                                                                                                                                                                                                                                                                                                                                                        /codon_start=1
/transl_table=11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       /codon_start=1
/transl_table=11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       /codon_start=1
/transl_table=11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        /gene="yaaj"
                                                                                                                                                                                                                                                /qene="yaaA"
                                                                                                                                                                                                                                                                                                                                      'gene" yaaA"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  /gene-"yaaJ"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        8729. .9319
/qene="moq"
                                                                                                                                                                                                                       gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        gene
                                                                                                                                                                                                                                                                                                       CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   LLTNVHGLNIDNWQAELAQANAPFNICKLIELVKEYHLLNVTVOTSSQAYADQYAD
FLREGFHVVTPNKRANTSSMYYHQLRFAAAQSRRKFLYDTNVGAGLPVIENLONLLN
AGDELQKFSOILSGSILSFIFKKLEEGMSLSQATALAREMGYTEPDPRDDLSGMDVARK
LLILARETGRELELSDIVIEPVLPDEFDASGDYTAFWAHLPQLDDAFAARVAKARDEG
KVLRYGNIEEDGYCKKIRENDGNDPLFKVKNGENALAFYSHYYQPLPLVLRGYGAG
NDYTAAGVFADLLRTLSWKLGV"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 HVLHGISLLGGCPDSINAALICRGEKMSIAIMAGLLEARGHRYTVIDPVEKLLLYGHY
LESTVOIAESTRRIAASQIPADHMILLARGFTAGHRKGELVYLGRNGSYSAVLAACL
RADCCELWITDVDGYTCDPROPDARLIKASSYOEAMELSYFGKYLHPRTTPIAQC
QIPCLIKNTGNPQAPGTLIGASSDDDNLPVKGISNLNNMAMESVSGPGMKGMIGMAR
YRAMGRAGISYVLITQSSSRYSISKOPYDGARRARMAGDEFYLERKEGLLEBLAY
TERLAIISVVGCGARTLGRIGSKFFAALLANINIVALAGGSSERSISVVNNDDATT
GVRYTHQMLENTDQVIEVFVIGVGGVGGALLEQLKROCTWLKNHIDLRVCGVANSKT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       /trānslation-"MVKVYÄPASSANMSVGFDVLGAAVTPVDGTLLGDVVSVEAADHF
RLHNLGRFÄDKLPPEPRENIYYOGMERFCQALGKTIPVAMTLEKNMPIGSGIGSSACS
VAALVAMNEHCGKPLNDTRLLALMEELGENISGSIHVDNWAPCFLGGWQLMIEENGI
ISQQVPGFDEMLWYLAYPGIKVSTRARALLPAQYRRQDCIAHGRHLAGFIHACYSKO
PQLAAALMKDVIAEPYRARLLPGFSQARQAVSEIGALASGISGSGPTLFALCDKPETA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             /translation-"mrvikfggtsvanaerfirvadilesnsrqgqvatvlsapakit
nhlvamiektiggqdalpnisdaerifsdllaglasaqpgfplarlkmvveqefaqik
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             /locus_tag="t0002"
/note="corresponds to STY0002 from Accession AL513382:
Salmonella typhi CT18; homoserine dehydrogenase I"
/codon_start=1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       /locus_tag="t0003"
/note="corresponds to STY0003 from Accession AL513382:
Salmonella typhi CT18"
/codon_start=1
                                                                                         /locus_tag="t0001"
/note="corresponds to STY0001 from Accession AL513382;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   /note="corresponds to STY0004 from Accession AL513382:
Salmonella typhi CT18"
                                                                                                                                                                                                                                   /product="thr operon leader peptide"
/protein_id="AAO67735.1"
/db_xreff="GI:29136168"
                                                                                                                                                                                                                                                                                                                   /translation="MNRISTTITITITITIGNGAG" 337. .2799 /gene="thrA"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              QRVADWLSKHYLQNQEGFVHICRLDTAGARVVG"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     /product="threonine synthase"
/protein_id="AAO67738.1"
/db_xref="GI:29136171"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    /product-"homoserine kinase"
/protein_id="AA067737.1"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       /product="aspartokinase I"
/protein_id="AA067736.1"
/db_xref="GI:29136169"
                                                                                                                                                Salmonella typhi CT18"/codon_start=1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           /db_xref="GI:29136170"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    /locus_tag="t0003"
2801. .3730
/gene="thrB"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           /locus_tag="t0004"
3734. .5020
/gene="thrC"
                                                                                                                                                                                                                                                                                                                                                                                                             10cus_tag="t0002"
   locus_tag="t0001"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    /locus_tag="t0004"
                                                                                                                                                                                                              /transl_table=11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           /transl_table=11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           /transl_table=11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            /transl_table=11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                /codon_start=
                                                             /qene="thrL"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     2801. .3730
/gene="thrB"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                             /gene="thrA"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      3734. .5020
/gene="thrC"
```

gene

CDS

gene

CDS

149762

1025

149816

149876

```
149877 CGCTATCTGACCGGCGATCGTATCCGCCTGTATTGCTTTGGCCGCGATGGCGCGCAGCTT 149936
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       salmonella typhimurium LT2
Salmonella typhimurium LT2
Salmonella typhimurium LT2
Bacteria; Proteobacteria; Gammaproteobacteria; Enterobacteriales;
Enterobacteriaceae; Salmonella.
1 (bases I to 22348)
McClelland, M., Sanderson, K.E., Spieth, J., Clifton, S.W.,
Latreille, P., Courtney, L., Porwollik, S., Ali, J., Dante, M., Du, F.,
Hou, S., Layman, D., Leonard, S., Nguyen, C., Scott, K., Holmes, A.,
Grewal, N., Mulvaney, E., Ryan, H., Florea, L., Miller, W.,
Stoneking, T., Nian, M., Waterston, R. and Wilson, R. K.
Complete genome sequence of Salmonella enterica serovar Typhimurium
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  GCCCAGGCACTGGGCAACGCGGTACCGCTGGTGCGCGTCGCAACGCTGGACGAAGCAGTC 1265
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    AE008699 22348 bp DNA 11near BCT 23-APR-2003 Salmonella typhimurium LT2, section 7 of 220 of the complete
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           The Salmonella typhimurium Genome Sequencing Project
Direct Submission
Submitted (29-MAR-2001) Genome Sequencing Center, Department of
                                                                                                                                                                                                                                                                                                                                                        149583 AAAGAGATGAAGCTTTCCGGTCAGCATAACTATACCAATGCGTTAGCGGCGCCTGGCGCTG
                                                                                                                                                               149643 GCGGATGCCGTAGGTCTGCCGCGCCAGCAGTTGAAGGCGTTGAAGGCGTTAACGGT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               786 CTGATCGAGGAAGACGCCCAGAAGTGGCTGGCGTTCCAGTTCGACAAGCTGCTGCCGGTT
                                    149523 CTTAATCGTCAGGGGGGAAACCTGGCTACGAGTCAAAGGTGAGAAGGTGCTGAACGTG
                                                                       846 GGCGAACTGAAGATCCGTGGCGCCCACAACTATTCCAACGCGCTCGCCGCGCTGGCGCTG
                                                                                                                                           CTGGCTCATCGCTGCCAGTGGGTACGCGAGGGCGAGGGCGTGAGCTACGACGATTCC
                                                                                                                                                                                                                                                                                    AAGGCCACCAACGTCGGCGCCCTGGCGGCGATCGAGGGGCTGGGTGCCGACATCGAC
                                                                                                                                                                                                                                                                                                                     149763 AAAGCGACCAATGTCGGCAGTACCGAAGCGGCGCTAAACGGTTTGCATG-----TGGAC
                                                                                                                                                                                                                                                                                                                                                                                                                              1146 GAGCCGGTCGCGCGCTTCTGCCGGGCGGTGGTACTGCTTGGCCGTGACGCCGGGCTGATT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     1266 CGCCAGCCGCCGAGCTGGCCCGCGAAGGCGATGCGGTGCTGTTGTCGCCGGCCTGCGCG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         1326 AGCCTGGACATGTTCAAGAACTTCGAAGAACGCGGACGCCTGTTCGCCAAAGCCGTAGAG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Nature 413 (6858), 852-856 (2001) 21534948
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     AE008699.1 GI:16418608
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             GAGCTAGCGTGATGC 1400
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             (bases 1 to 22348)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      AE008699. AE006468
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             11677609
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           депоше
                                                                                                                                                                                                                                                                                    1026
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  1206
                                                                                                                                           906
                                                                                                                                                                                                               996
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               1386
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      DEFINITION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ORGANISM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            AUTHORS
CONSRIM
TITLE
JOURNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               REFERENCE
AUTHORS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           PUBMED
REFERENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        JOURNAL
MEDLINE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ACCESSION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 RESULT 7
AE008699
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        VERSION
KEYWORDS
SOURCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       TITLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 g
                                d
                                                                       ð
                                                                                                      셤
                                                                                                                                         ŏ
                                                                                                                                                                            a
                                                                                                                                                                                                               ŏ
                                                                                                                                                                                                                                                셤
                                                                                                                                                                                                                                                                                  ŏ
                                                                                                                                                                                                                                                                                                                   a
                                                                                                                                                                                                                                                                                                                                                        δ
                                                                                                                                                                                                                                                                                                                                                                                    g
                                                                                                                                                                                                                                                                                                                                                                                                                            ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                             qq
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        엄
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   149052 AGCGCTGCCCCCAGCGCTGGAAATTGTCGGCGATATCGAACTGTTTTGCCGCGAA 149111
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     148992 CICITAGCGGCGGATITAAICGICGCCAGCCCIGGIAIIGCICIGGCGCAICCCICITI 149051
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              149292 CAATTGGAAACTACCTCAAGTTTGCAAGCGGCGGCGCGAACGGTGCTCAACGTCACTGAA 149351
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       148941 AAGCTGCCG------CAAGAGGTTGAGCGTCACGTTGGCGGCCTGAACGACGAGTGG 148991
                                                                                                                   /translation="MATLRIGLYSISDRASSGVYQDKGIPALEEWLASALTTPFELQT
RLIPDEQAITEQTLCELVDEWSCHLVLTTGGTGPARRDVTPDATLAIADREMPGFGEG
WARDISLREYPTALLSRQVQYIRKQALIINLPGQPKSIKETLEGVKADDGSVSVPGIFA
SVPYCIQLLDGPYVYBAFRYAAFRKSARRENMSS"
complement(9376..9942)
                                                                                                                                                                                                                                                                                                                                                                                                             ŝ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    665
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              785
                                                                                                                                                                                                                                                                                                                                                                                                                                            69 GACCACTTCCGCATCGTTGTCGGCCTCGGCAAGAGCGGCATGTCCCTGGTGCGCTACCTG 128
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ACCCTGCGTGCCCAGTATCCGCAGGTGGAAGTGCGTTGCGGCGAACTCGACGCCGAGTTC 248
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       GTGGGCGAAATGGCGGTGGCCGCGGACAAGCGTGTCGCCGTCGGCGCAACCTCGGCACC 488
                                                                                                                                                                                                                                                                  /locus_tag="t0009"
/note="corresponds to STY0009 from Accession AL513382:
Salmonella typhi CT18"
/codon_start=1
 STY0008 from Accession AL513382:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                GCGCGCCGCGCCTTTCGCCGTGGTCGATACCCGAGAGAACCCGCCGGAGCTGGCC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        CTCTGCTCCGCCCGCGAACTCTATGTCAGCCCCGGCTTGTCGCTGCGCACCCCTGCGCTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              309 GTACAGGCCGCCGCGAAAGGCGTGCGCATCTCCGGTGACATCGATCTTTCGCCCGCGAG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   GCGAAGGCCCCGATCGCCCATCACCGGTTCCAACGCGAAGAGCACCGTGACCACCCTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           CCGCCCCTCGACCTGCTGGCCGACGACATCGAGCTGTACGTGTTGGAGCTGTCGAGCTTTC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               CAGCTGGAAACCTGCGATCGCCTCAACGCCGAGGTGGCGACCGTGCTGAACGTCAGCGAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  GACCATATGGATCGCTA---CGACGGCATGGCTGACTACCACCTGGCCAAGCACCGGATC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      TTCCGCGGTGCCCGCCAGGTCGTGTGATCGCGCCGATGCCCTGACCCGACCGCTGATC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            GCCGATACCGTGCCGTGCTCGTTCGGCCTGAACAAGCCGGACTTCAAGGCTTTCGGC
                                                                                                                                                                                                                                                                                                                                                                                                             Gaps
                                                                     protein'
                                                                                                                                                                                                                                                                                                                                                                          DB 1; Length 300169;
                                                                                                                                                                                                                                                                                                                                                                                                             33;
                                /codon_start=1
/transl_table=11
/product=molybdopterin biosynthesis Mog
/protein_id="AAO67742.1"
/db_xref="G1:29136175"
                                                                                                                                                                                                                                                                                                                                                                                                          Indels
                                                                                                                                                                                                                                                                                                                                                                                                           552;
                                                                                                                                                                                                                                                                                                                                                                       Score 335.8; DB 1
Pred. No. 1.5e-31;
0; Mismatches 552
                                                                                                                                                                                                                                                complement(9376. .9942)
Salmonella typhi CT18"
                                                                                                                                                                                                                             /locus_tag="t0009"
                                                                                                                                                                                                                                                                                                                                                                         23.2%;
56.2%;
                                                                                                                                                                                                             /gene="yaaH"
                                                                                                                                                                                                                                                                                                                                                                                                          Conservative
                                                                                                                                                                                                                                                                                                                                                                                           Similarity
                                                                                                                                                                                                                                                                                                                                                                                                          750;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      189
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     429
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         489
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            726
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                129
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        249
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               549
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 609
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 369
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      999
                                                                                                                                                                                                                                                                                                                                                                          Query Match
                                                                                                                                                                                                                                                                                                                                                                                                          Matches
                                                                                                                                                                                                gene
                                                                                                                                                                                                                                                 CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                            ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                            g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                õ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ŏ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ŏ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ద
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ٠Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ò
```

150110

```
KLFSNLRPAKLYQGLEAFCPLRÄDIAANGFDILCVRELTGGIYFĞQPKGREGSGQYEK
AFDTEVYHREIERTARIAFESARKRRKYTSIDKANVLQSSILMRETVNDVAKTYPD
VELAHWYIDNATWQLIKDPSQFDVLLCSNLFGDILSDECAMITGSMGMLPSASLNEGG
FGLYEPSGSAPDIAGKNIAMPIAQILSLALLLRYSLDANDAATAIEQAINRALEEGY
RTGDLARGAAAVSTDEMGDIIARYVAEGY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        /product="2-isopropylmalate synthase"
/product="2-isopropylmalate synthase"
/protein_id="AAL1907", 1"
/db_xref="G1:16418612"
/translation="MaQQVIIFDTILRDGEQALQASLSAKEKLQIALALERMGVDVME
VGFPVSSPGDFESVQTIARTIKNSRVCALARCVEKDIDVAAQALKVADAFRHHFIAT
SPHIJAFKRSTLDEVIERAVYWKRRANYTDDFSCEDAGRTPVDDLARVVEAAIN
AGARTINIPDTWGTYWFFERPAISISCHTRANYTDDKAIISYHTHDDLGIAVGNSLAAV
HAGARQVEGAMNGIGERAGNCALEEVIMAIKVRKDIMNVHTNINHHEIWRTSQTVSQI
VALRABEIJAPOVTWGTNPGOVISVTDIJPDPASFSDPVERASAEKALAYWGLQPGVPL
TDVAIDKVFIGSCTNSRIEDLRAAAEVAKGRKVAPGVQALVVPGSGPVKAQAEAEGLD
KIFIEAGFEWRLPGCSWCLAMNNDRLNPGERCASTSNRNFEGRQGRGGRTHLVSPAMA
                                                                                                                                                                                                                                                                                                                                                                                         /product="3-1sopropylmalate dehydrogenase"
/protein_id="AAL19076.1"
/protein_id="16418611"
/b_xref="c1:16418611"
/translation="MSKNYH1AVLPGDGIGPEVMAQALKVMDAVRSRFDMRITTSHYD
VGGIAIDNHGHPLPKATVEGCEQADAILFGSVGGPKWENLPPESQPERGALLPLRKHF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    CNMPIPANKAIVGSGAFAHSSGIHQDGVLKNRENYEIMTPESIGLNQIQLNLTSRSĞR
AAVKHRMEMEMOYKDTDYNMDHLYDAFLKLADKKGQYEDYDLEALAFINKQQEEPEHFR
LDYFSVQSGSSDIATASVKLACGEEIKAEAANGNGPVDAIYQAINRITGYDVELVKYD
LNAKGQGKDDLGQVDIVVNHHGRRFHGVGLATDIVESSAKAMVHVLNNIWRAAEVEKE
LQRKAQNKENNKETV"
                                                                                                                                                                                                                                                                                                        /note="3-isopropylmalate dehydrogenase. (SW:LEU3_SALTY)"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       //orde="putative RBS for leuC; RegulonDB:STMS1H000491"
complement(3408..4999)
/gene="leuA"
//orde="sponym: STM0113"
complement(3408..4979)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            /gene-"leux"
/note="putative RBS for leuA; RegulonDB:STMS1H000493"
complement(5067. 5298)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  /note"putative RBS for leuL; RegulonDB:STMS1H000494" (complement(5271. .5279)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       /gene="leuB"
/note="putative RBS for leuB; RegulonDB:STMS1H000492"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          /note-"similar to E. coll 2-isopropylmalate synthase (AAC73185.1); Blastp hit to AAC73185.1 (523 aa), 92% identity in aa 1 - 523"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               /note="leu operon leader peptide. (SW:LPL_SALTY)"
/codon_start=1
/transl_table=11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   /translation="MSHIVRFTGLLLLNAFIVRGRPVGGIQH"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        /product-"leu operon leader peptide"
/protein_id-"AAL19078.1"
/db_xref-"GI:16418613"
                                                                                                                                                                                      /note="synonym: STM0112"
complement(2317. .3408)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    /note="synonym: STM0114"
complement(5067. .5153)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     complement(2322. .2327)
                                                                                                                             complement(2317. .3422)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           complement(3417. .3422)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   complement(4994. .4999)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            complement(5162, .5167)
                                                                                                                                                                                                                                                  /gene="leuB"
/EC_number="1.1.1.85"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 /gene="leuA"
/EC_number="4.1.3.12"
                                                                                                 AAAAVTGHFADIRSIK"
                                                                                                                                                                                                                                                                                                                                                                   /transl_table=11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  /transl_table=11
                                                                                                                                                                                                                                                                                                                                          /codon_start=1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  /codon_start=1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           /gene="leuL"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 /gene="leuB"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      /gene-"leuL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           -10_signal
                                                                                                                                 gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  gene
                                                                                                                                                                                                                   CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     RBS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              RBS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          RBS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   This sequence was finished as follows unless otherwise noted: all regions were double stranded, sequenced with an alternate chemistries or covered by high quality data (i.e., phred quality >= 30); an attempt was made to resolve all sequencing problems, such as compressions and repeats; all regions were covered by sequence from more than one mil subclone.

Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         /translation="MAEKFTQHTGLVVPLDAANVDTDAIIPKQFLQKVTRTGFGAHLF
MDWRFLDERGQQPNDEFYLMPFBYQASAILLARBFGGGSSREHAPWALTDYGFKVVI
APSFRDIFYGNSFNOYLLPYTLSDAQVDELFALVKANGIKFEVDLEAQVVKAGDKTY
SFKIDDFRRHCMLNGLDSIGLTLQHEDAIAAYENKQPAFMR"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      /traislation-"Maktlyekledahvveraphetlyidrhuvhevtspoaedgl
Rahhrryropektpaymdhavstordinasgemariomoeliknoneegvelydlin
Pygolvhymopeggytlegmivcgdshtathgergalaefgisegrelatotlko
Grakumkievtgnaaegitakdivlaaiigkrosaggyghymercgdairalsbergru
LCNMaiemgakaglvapdettenyvkgrlhapkgrdfdeavevwktiktddgatedyv
                                                                                                                                                                                                                                                                     EC numbers were kindly provided by Junko Yabuzaki and the Kyoto Encyclopedia of Genes and Genomes; http://www.genome.ad.jp/kegg/, and Pedro Romero and Peter Karp at EcoCyc;
                                                                                                                                                                                                                                                                                                                                                                                                                      The analyses of ribosome binding sites and promoter binding sites were kindly provided by Heladia Salgado, Julio Collado-Vides and ReguonDB;
                                                                                                                       Coding sequences below are predicted from manually evaluated computer analysis, using similarity information and the programs; GLIMMER; http://www.igia.org/softlab/glimmer/glimmer.html and GeneMark; http://opal.biology.gatech.edu/GeneMark/
   Genetics, Washington University School of Medicine, 4444 Forest
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 /gene="leub"
/note="putative RBS for leub; RegulonDB:STMS1H000490"
complement(914. .2327)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        /product-"3-isopropylmalate isomerase (dehydratase),
subunit with Leuc"
/protein.id="AAL19074.1"
/db_xref="GI:16418609"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        /product="3-isopropylmalate isomerase (dehydratase) subunit with LeuD"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    /note="3-isopropylmalate dehydratase small subunit.
(SW:LEUD_SALTY)"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             /note="3-isopropylmalate dehydratase large subunit.
(SW:LEU2_SALTY)"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 http://kinich.cifn.unam.mx:8850/db/regulondb_intro.frameset
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         /organism="salmonella typhimurium LT2"
/mol_type="genomic DNA"
/strain="hT2; SGSC 1412; ATCC 700720"
/db_xref="ATCC:700720"
/db_xref="ATCC:700720"
/db_xref="LT2"
/note="LT2"
/conplement(298. .915)
/note="leub"
/note="synonym: STM0110"
                                                           Supported by NIH grant 5U 01 AI43283
                                     USA
                                                                                                                                                                                                                                                                                                                                                                http://ecocyc.PangeaSystems.com/ecocyc
                                  Louis, MO 63108,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        /note="synonym: STM0111"
complement(914. .2314)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                /protein_id="AAL19075.1"
/db_xref="GI:16418610"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       /EC_number="4.2.1.33"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    /EC_number="4.2.1.33"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    complement(910. .915)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               /codon_start=1
/transl_table=11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              /transl_table=11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            /codon_start=.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      /gene="leuc"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              /gene="leuD'
                                     Park Boulevard, St.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    /gene="leuC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             1. .22348
                                                           COMMENT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Source
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          FEATURES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    RBS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     CDS
                                                              COMMENT
```

```
19306
                                                                                                                                                                                                                                                                                                                     19826 CGTTTGCTGGCGCCGCGCGTTCAGCCGGGTGATATGGTGCTGCTGTCGCCCGCTTGCGCT 19885
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   19357
                                                                                                                                                                                                                         19477
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                9712 CGCTATCTGACCGGGGATCGTATCGCCTGTATGCTTTGGGCGCGCGATGCCGCATGCTGT 19771
                                                                                                                                                                                                                                                                                                                                                                                                  19537
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    1 (bases 1 to 1144)
Jin.Q., Yuan, Z.H., Xu,J.G., Wang,Y., Shen,Y., Lu,W.C., Wang,J.H.,
Liu,H., Yang,J., Yang,F., Qu,D., Zhang,X.B., Zhang,J.Y., Yang,G.W.,
Wu,H.T., Dong,J., Sun,L.L., Xue,Y., Zhao,A.L., Gao,Y.S., Zhu,J.P.,
Kan,B., Chen,S.X., Yao,Z.J., He,B.K., Chen,R.S., Ma,D.L.,
Qlang,R.Q., Wen,Y.M., Hou,Y.D. and Yu,J.
Genome sequence of Shigalla flasmeri 2a: insights into
pathogenicity through comparison with genomes of Escherichia coli
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         GCCCAGGCACTGGGCAACGCGGTACCGCTGGTGCGCGTCGCAACGCTGGACGAAGCAGTC 1265
                                                                                                                                                                                                                                                                                                                                                                                                                                               GGCAAGCTGGTGCTCCTCGCCGGCGGAGACGGCAAGGGCGCCCGATTTCCATGACCTGCGC 1145
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1146 GAGCCGGTCGCCGCGTTCTGCCGGGCGGTGCTTGCTTGGCCGTGACGCCGGGCTGATT 1205
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1325
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            BCT 18-OCT-2002
                                                                                                                              845
                                                                 785
                                                                                                                                                                                           905
                                                                                                                                                                                                                                                        965
    725
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Shigella flexneri 2a str. 301
Shigella flexneri 2a str. 301
Bacteria; Proteobacteria; Gammaproteobacteria; Enterobacteriales;
Enterobacteriaceae; Shigella.
    TTCCGCGCTGCCCGCCAGGTCGTGGTGAATCGCGCCGATGCCCTGACCCCGACCGCTGATC
                     GGCGAACTGAAGATCCGTGGCGCCCACAACTATTCCAACGCGCTCGCCGCGCTGGCGCTG
                                                                                                                                                                                                                                                                                                                                                                                    AAGGCCACCAACGTCGCGCCCCCCTGGCGGCGATCGAGGGGCTGGGTGCCGACATCGAC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       CGGCAGGCCGCCGAGCTGCCCGCGAAGGCGATGCGGTGCTGTTGTCGCCGGCCTGCGCG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    AGCCTGGACATGTTCAAGAACTTCGAAGAACGCGGACGCCTGTTCGCCAAAGCCGTAGAG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           AE015046 11441 bp DNA linear BCT 18-OCT Shigella flexneri 2a str. 301 section 9 of 412 of the complete
                                                                   GCCGATACCGTGCCGTGCTGGTCGTTCGGCCTGAACAAGCCGGACTTCAAGGCTTTCGGC
                                                                                                                                CTGATCGAGGAAGACGGCCAGAAGTGGCTGGCGTTCCAGTTCGACAAGCTGCCGGTT
                                                                                                                                                                                                                                                        GGCCATGCGGTCGGCCTGCCGTTCGACGCCATGCTCGGCGCGCTGAAGGCGTTTTCCGGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ||| ||| ||||
19946 GAGTTAGGTTGATGC 19960
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         GI:24050283
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 GAGCTAGCGTGATGC 1400
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            genome.
AE015046 AE005674
AE015046.1 GI:24
                                                                                                                              786
                                                                                                                                                                                                                         19418
                                                                                                                                                                                                                                                                                                                                                                                    1026
                                                                                                                                                                                                                                                                                                                                                                                                                                               1086
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          1206
    999
                                                                 726
                                                                                                                                                                                             846
                                                                                                                                                                                                                                                        906
                                                                                                                                                                                                                                                                                       19478
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        19772
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1266
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    1326
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 1386
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        VERSION
KEYWORDS
SOURCE
ORGANISM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         DEFINITION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       REFERENCE
AUTHORS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             RESULT 8
AE015046
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ACCESSION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       TITLE
                                                                                                                                                                                                                                                                                                                                                                                                                g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                        g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      සු
                             g
                                                                δ
                                                                                             g
                                                                                                                              ŏ
                                                                                                                                                          g
                                                                                                                                                                                           ŏ
                                                                                                                                                                                                                      g
                                                                                                                                                                                                                                                       ò
                                                                                                                                                                                                                                                                                    a
                                                                                                                                                                                                                                                                                                                     Óγ
                                                                                                                                                                                                                                                                                                                                              g
                                                                                                                                                                                                                                                                                                                                                                                οy
                                                                                                                                                                                                                                                                                                                                                                                                                                               δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       å
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  요
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          GACAAAAACGTCGTCATTATTGGTCTGGGCTTAACCGGACTCTCTTGCGTGGACTTTTTT 18715
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        18716 CTCGCCGCGGGGGTGATGGTGGTGGTACTCGCGTGACGCCGCGGGTCTGGAT 18775
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 AAGCIGCCG------CAAGAGGITGAGCGTCACGITGGCGGCCTGAACGACGAGGG 18826
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     18946
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      19007 GTGGGCGAGATGGCGAAAGCGGCGGGGGTCAATGTCGGCGTTGGCGGCAATATCGGTCTT 19066
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   CAACTGGAAACTACCTCAAGTTTGCAAGCGGCGGCGCCAACGGTGCTCAACGTCACTGAA 19186
                                                                                                                                                                                                                                                                                                                               /trailation-"MPEVKTEKPHLLDMGKPQLRMVDLNLLTVFDAVMOEQNITRAAH
TLGMSQPAVSRAVARLKVFWFDELFYRTGRGTQFTAARFOLFGGSVRQALGLVONELPG
SGFEPTSSERYFNLGVCSPLDNILTSQIYNNYEKIAPNIHVVFKASLNQNTEHQLRYG
ETEFVISYEEFRRPEFTSVPLFKDEMVLJASRKHPRISGPLLEGDVYREQHAVYSLDR
FYSTSQPWYDTPDKQSSVAYQGMALISVLNVVSQTHLVAIAPRWLAEEFAESLDLQIL
PLALKLNSRTCYLSWHEAAGRDKGHQWMEDLLVSVCKR"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Š.
                                                                                                                                                                                                                                                                                 /product="putative LysR family transcriptional regulator"
/protein_id="AAL19079.1"
/db_xref="GI:16418614"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         188
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      248
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   308
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              368
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            488
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         548
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         608
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            GACCACTTCCGCATCGTTGTCGGCCTCGGCAAGAGCGGCATGTCCCTGGTGCGCTACCTG 128
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               GCGCCCCCCCGCGCTTGCCTTTCGCCGTGGTCGATACCCGAGAGGAGCCGGCGGAGCTGGCC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ACCCTGCGTGCCCAGTATCCGCAGGTGGAAGTGCGTTGCGGCGAACTCGACGCCGAGTTC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                CTCTGCTCCGCCCGCGAACTCTATGTCAGCCCCGGCTTGTCGCTGCGCACCCCTGCGCTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              GTACAGGCCGCCGCGAAAGGCGTGCGCATCTCCCGGTGACATCGTTCTTCGCCCGCGAG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        GTGGGCGAAATGGCGGGTGGCGGGACAAGCGTGTCGCCGTCGGCGGCAACCTCGGCACC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       CAGCTGGAAACCTGCGATCGCCTCAACGCCGAGGTGGCGACCGTGCAACGTCAGCGAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  GACCATATGGATCGCTA---CGACGGCATGGCTGACTACCACCTGGCCAAGCACCGGATC
                                                                                                                                                                         /note-"putative RBS for leu0; RegulonDB:STMS1H000495"
5810. .6754
/gene="leu0"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                            Score 332.6; DB 1; Length 22348;
Pred. No. 6.5e-31;
0; Mismatches 554; Indels 33;
                                                                                                                                                                                                                         note="probable activator protein in leuabcd
                                       /note="putative -35_signal for leuL;
RegulonDB:STMLTH004472"
5798. 6754
/note="putative -10_signal for leuL; RegulonDB:STMLTH004472" complement(5290. .5298)
                                                                                                                           /note="synonym: STM0115"
5798. .5803
/gene="leu0"
                                                                                                                                                                                                                                        SW: LEUO_SALTY)"
                                                                                                                                                                                                                                                       /codon_start=1
/transl_table=11
                                                                                                                                                                                                                                                                                                                                                                                                                                                          22.9%;
56.0%;
                                                                                               5798. .6754
/gene="leu0"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                              protein_bind
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             748;
                                  -35_signal
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              18827
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   19127
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  19187
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            69
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     189
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  18776
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  249
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             309
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        429
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       489
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     549
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        18656
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      19061
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    609
                                                                                                                                                                                                                                                                                                                                                                                                                                                            Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Best Loca
Matches
                                                                                                 gene
                                                                                                                                             RBS
                                                                                                                                                                                          CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     d
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         οy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ģ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ŏ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      요
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ŏ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            à
```

```
/translation="MKAAAKTQKPKRQEEHANFISWRFALLGGCILLALAFLLGRVAW
LQVISPDMIVKEGDBRSLRVQQVSTSRGMITDRSGRPLAVSVPVKAIWADPKEVHDAG
ELGVISPDMIVKEGDBRSLRVDQLSARINANPKGRFIYLARQVNSDMADYIKKLKLPGIH
LREESRRYPSGEVTAHLIGFTNVDSQGIEGVEKSFDKWLTGQPGBRIVRKDRYGRVI
EDISSTDSQAAHNLALSIDERLQALVYRELNNAVAFNKĀESGSAVLVDVNTGEVLAMA
CIILTAVTVVTTAHHTRLLTAQREQLVLERDALDIEWRNLILEENALGDHSRVERIAT
EKLQMQHVDPSQENIVVQK"
2107. .3873
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        NSPSYNPNNLSGTPKEAMRNRTITDVFEPGSTVKPMVVMTALQRGVVRENSVLMTIPY
RINGHEIKDVARYSELTLTGVLQKSSNVGVSKLALTMPSSALVDTYSRFGLGKATNLG
LVGERSGLYPQKQRWSDIERATFSFGYGLMVTPLQLARVYATIGSYGIYRPLSITKVD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     PPVPGERVFPESIVRTVVHMMESVALPGGGGVKAÄIKGYRIAIKTGTAKKVGPDGRYI
NKYIAYTAGVAPASQPRFALVVVINDPQAGKYYGGAVSAPVFGAIMGGVLRTMNIEPD
ALTTGDKNEFVINGGEGTGGRS"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                /product="UDD-N-acetylmuramoylalanyl-D-glutamate--2,
6-diaminoplmelate 11gase"
6-byotean_id="AaN41747.1"
/db_xref="E12465028"
/translation="MADRNIRDLLAPWYPDAPSRALREWTLDSRVAAAGDLFVAVVGH
QADGRRYIPQAIAQGVAAIIAEAKDEATDGEIREWHGVPYYLLSQLNERLSALAGRFY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   HEPSDNLRLVGVTGTNGKTTTTQLLAQWSQLLGETSAVMGTVGNLLGKVIPTENTTG
SAVDVQHELAGLVDQGATFCAMEVSSHGLVQHRVAALKFPASVFTNLSRDHLDYHGDM
EHYEAAKWLLYSEHHCGQAIINADDEVGRRWLAKLPDAVAVSMEDHINPNCHGRWLKA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   TEVNYHDSGATIRFSSSWGDGEIESHLMGAFNVSNLLLALATLLALGYPLADLLKTAA
RLQPVGGRWEDFTAPGKFTYVVDVAHFDALLEKALQARNLHCAKLMCVFGGGGDRDK
RRELMGAIREEFADVAVYDDNPRTEEPRAIINDILAGMLDAGHAKVMEGRAEAVTC
AVMQAKENDVVLVAGKGHEDYQIVGNQRLDYSDRVTVARLLGGIA"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              /translation="MISYTLSQLTDILNGELQGADITLDAVTTDTRKLTPGCLFVALK
GERFDAHDFADQAKAGGAGALLVSRPLDIDLPQLIVKDTRLAFGELAAWVRQQVPALV
VALTGSSGKTSVKEMTAAILSQCGNTLYTAGNINNDIGVPMTLIRLTPEYDYAVIELG
VALTGSSGKTSVKEMTAAILSQCGNTLYTAGNINNDIGVPMTLIRLTPEYDYAVIELG
NAUTHOGELAAWVSLTRPEATVNNLAAHLEGFGSLAGVAKKGEIFSGLPENGIAINN
ADNNDWLMYGSVIGSRVWRFSPNAANSDFTANNIHTSHGMEFTLQFPTGSVDVLLF
LPGRHNIANALAAAALSMSVGATLDAIKAGLANLKAVPGRLFPIQLAENOLLLDDSYN
                                                                                                                                                                                                                            /note="Residues 1 to 588 of 588 are 99 pct identical to residues 1 to 588 of a 588 as protein from Escherichia coli 0157:H7 EDL933 ref: NP_285780.1"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       /note="Residues 1 to 495 of 495 are 99 pct identical to residues 1 to 495 of a 495 aa protein from Escherichia coli pir: $40595"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              /jocus_tag="SF0083"
/note=="Residues 1 to 452 of 452 are 99 pct identical to
residues 1 to 452 of a 452 aa protein from Escherichia
coli K12 ref: NP_414628.1"
                                                                                                                                                                                                                                                                                                                                      /transl_table=11
/transl_table=11
/product="septum formation; penicillin-binding protein
/protein_id="AAN41746.1"
/db_xref="G1:24050287"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           /product="D-alanine:D-alanine-adding enzyme"
/protein_id="AaN41748.1"
/db_xref="GI:24050289"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            /locus_tag="SF0082"
/EC_number="6.3.2.13"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   /locus_tag="SF0082"
3860. .5347
/gene="murE"
                                                                                                                  /locus_tag="SF0081"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 /locus_tag="SF0083"
5344. .6702
/gene="murF"
                                                                                                                                                                                                     /locus_tag="SF0081"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               /transl_table=11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             /transl_table=11
                                                                                                                                                                                                                                                                                                                  /codon_start=1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  /codon_start-
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                /codon_start=1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      3860. .5347
/gene="murE"
                                                              2107. .3873
/gene="ftsI"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   5344. .6702
/gene="murF"
                                                                    gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   gene
                                                                                                                                                 CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             LGEEGRLLAIDRDPQAIAVAKTIDDPRFSIIHGPFSALGEYVAERDLIGKIDGILLDE
GVSSPOLDDBARGFSFWRDGPLDMRMDPTRGQSAARWLQTAERDLIAWVLKTYGEEHF
KKTARAIVERNREQPWTRKELAEVVAATPVKKKFKHPATRTFQAVRIWVNSELEE
IEQALKSSLWVLAPGERLSIISFHSLEDRIVKRFWRENSRGPQVPAGLPWTEEQLKKL
GGRQLRALGKLMPGEEEVAENPRARSSVLRIAERTNA"
                                                                                                                                                                                                                                                           Ministry
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       'translation="MMENYKHTTVLLDEAVNGLNIRPDGIYIDGTFGRGGHSRLILSQ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      2 (bases 1 to 11441)
Jin,Q., Shen,Y., Wang,J.H., Liu,H., Yang,J., Yang,F., Zhang,X.B.,
Zhang,J.Y., Yang,G.W., Wu,H.T., Dong,J., Sun,L.L., Xue,Y.,
Zhao,A.L., Gao,Y.S., Zhu,J.P., Chen,S.X., Yao,Z.J., Wang,Y.,
Lu,W.C., Qiang,B.Q., Wen,Y.M. and Hou,Y.D.
Direct Submission
Submitted (08-MAY-2001) Microbial Genome Center of Chinese Ministriof Public Health, 100 Yingxin Jie, XuanWu Qu, Beijing 100052, P.R.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         /gene="yabb"
/locus_teg="SP0078"
/note="residues 13 to 164 of 164 are 99 pct identical to
residues 1 to 152 of a 152 aa protein from Escherichia
coli 0157:H7 EDL933 ref: NP_285777.1"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        /locus_tag="SF0080"
/note="Residues 1 to 121 of 121 are 100 pct identical to
residues 1 to 121 of a 121 aa protein from Escherichia
coli 0157:H7 EDL933 ref: NP_285779.1"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           /locus_tag="SF0079"
/note="Residues 1 to 313 of 313 are 99 pct identical to
residues 34 to 346 of a 346 aa protein from Escherichia
coli pir: QQECFT"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        /product="cell division protein; ingrowth of wall at
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            /transl_table=11
/product="orf, conserved hypothetical protein"
/protein_id="AAN41743.1"
                                                                                                                                                                                                                                                                                                                                                       1. .11441
/organism="Shigella flexneri 2a str. 301"
/mol_type="genomic DNA"
/strain="301"
                                  Acids Res. 30 (20), 4432-4441 (2002)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 /product="yabc protein"
/protein_id="AAN41744.1"
/db_xref="G1:24050285"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                               /serotype="2a"
/db_xref="taxon:198214"
                                                                                                                                                                                                                                                                                                                                        Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           locus_tag="SF0079"
18. .1729
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        /locus_tag="SF0080"
1726. .2091
/gene="ftsL"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         locus_tag="SF0078"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                /codon_start=1
/transl_table=11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       /codon_start=1
/transl_table=11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      /codon_start=1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  292. .786
/gene="yabB"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                'gene" yabC"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             gene="yabC"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 /gene="ftsL"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   .1729
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         DLSL"
        and 0157
                                                            12384590
                               Nucleic
                                                                                                                                                                                                                                                                                                                                                                     source
                                                                                                                                                                                                                         TITLE
JOURNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        gene
                                                                                     REFERENCE
                                                                                                                  AUTHORS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         gene
                                                            PUBMED
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          gene
                                  JOURNAI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    CDS
                                                                                                                                                                                                                                                                                                                                      FEATURES
```

```
8570
                                                                                                                                                                                                                                                                                                                                        8630
                                                                                                                                                                                                                                                                                                                                                                                                     8690
                                                                                                                                                                                                                                                                                                                                                                                                                                  1038
                                                                                                                                                                                                                                                                                                                                                                                                                                                                 8750
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         1158
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    1218
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 8921
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            8978
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             DNA linear BCT 22-APR-2003 section 1 of 16 of the complete
                                                                                                                                                     8459
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               1098
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          8804
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       8864
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            1338
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        TCAAGAACTTCGAAGAACGCGGACGCCTGTTCGCCAAAGCCGTAGAGGAGCTAGCGTGAT 1398
                                8339
                                                                                                                                                                                                                  8510
                                                                                           8399
                                                            678
                                                                                                                      738
                                                                                                                                                                                   798
                                                                                                                                                                                                                                             858
                                                                                                                                                                                                                                                                                                          918
                                                                                                                                                                                                                                                                                                                                                                     978
   621
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Shigella flexneri 2a str. 2457T
Shigella flexneri 2a str. 2457T
Bacteria; Proteobacteria; Gammaproteobacteria; Enterobacteriales;
Enterobacteriaceae; Shigella.
                   AGGGCGAAACCTGGCTGCGGGTTAAAGGCGAGAAAGTGCTGAATGTGAAAGAGATGAAAC
                                                                                                                                                                                                                                                                                                                           ---GCCCGGAAGTGGCAGAACAAACCGAAACTATGGAACAGGCTATGCGCTTGCTGGCTC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            GCGATCGCCTCAACGCCGAGGTGGCGACCGTGCTGAACGTCAGCGAAGACCATATGGATC
                                                              GCTAC---GACGGCATGGCTGACTACCACCTGGCCAAGCACCGGATCTTCCGCGGTGCCC
                                                                                           8340 GCTACCCGTTTGGTTTACAACAGTATCGTGCAGCAAAACTGCGCATTTACGAAAACGCGA
                                                                                                                         GCCAGGTCGTGGTGAATCGCGCCGATGCCCTGACCCGACCGCTGATCGCCGATACCGTGC
                                                                                                                                                     AAGTTTGCGTGGTTAATGCTGATGATGCCTTAACAATGCCGATTCGCGGTGCGGATGAAC
                                                                                                                                                                                     CGTGCTGGTCGTTCGGCCTGAACAAGCCGGACTTCAAGGCTTTCGGCCTGATCGAGGAAG
                                                                                                                                                                                                                  GCTGCGTCAGCTTTGGCGTCAACATGGGTGACTATCA------CCTGAATCATCAGC
                                                                                                                                                                                                                                                ACGCCAGAAGTGGCTGGCGTTCCAGTTCGACAAGCTGCTGCCGGTTGGCGAACTGAAGA
                                                                                                                                                                                                                                                                                                           GCCTGCCGTTCGACGCCATGCTCGGCGCGCTGAAGGCGTTTTTCCGGCCTGGCTCATCGCT
                                                                                                                                                                                                                                                                                                                                                                                                     8631 GGTTACCGCGCGCCCAGCAGCCTGAAAGCGTTAACCACCTTCACCGGTCTGCCGCATCGCT
                                                                                                                                                                                                                                                                                                                                                                                                                                    GCCAGTGGGTACGCGGGGGGGGGGGGGTGAGTACGACGATTCCAAGGCCACCAACG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                 8691 TTGAAGTGGTGCTGGAGCATAACGGTGTGCGCTGGATTAACGATTCAAAAGCGACCAACG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               TCGGCGCCCCTGGCGGCGATCGAGGGGCTGGGTGCCGACATCGACGCCAAGCTGGTGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 TGCTCGCCGGCGGAGGCGCAAGGGCGCCGATTTCCATGACCTGCGCGAGCCGGTCGCGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       TGTTGCTGGGCGGCGATGGTAAATCGGCGGACTTTAGCCCACTGGTGCGTTACCTGAATG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      GCTTCTGCCGGGCGGTGGTACTGCTTGGCCGTGACGCCGGGCTGATTGCCCCAGGCACTGG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   GCAACGCGGTACCGCTGGTGCGCGTCGCACGCTGGACGAAGCAGGCCGCAGGCCGCCG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              AGCTGGCCCGCGAAGGCGATGCGGTGCTGTTGTCGCCGGCCTGCGCGAGCCTGGACATGT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      TCAAGAACTTTGAACAACGAGGCAATGAGTTTGCCCGTCTGGCGAAGGAGTTAGGTTGAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      GCTGTCGGTGTTGCGCCCCTTCCCGTCGCCGCTGTTGAGCCGGCACGCCATC 1450
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              290029 bp
2a str. 2457T
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           GI:30039813
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Shigella flexneri
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              genome.
AE016978 AE014073
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           AE016978.1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              AE016978
                                                              622
                                                                                                                         629
                                                                                                                                                      8400
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    1159
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   8865
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 1219
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              8922
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            1279
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        1339
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      9039
                                                                                                                                                                                   739
                                                                                                                                                                                                                  8460
                                                                                                                                                                                                                                                799
                                                                                                                                                                                                                                                                             8511
                                                                                                                                                                                                                                                                                                                                          8571
                                                                                                                                                                                                                                                                                                                                                                       919
                                                                                                                                                                                                                                                                                                                                                                                                                                    979
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               1039
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            8751
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         1099
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       8805
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     1399
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   6606
                                                                                                                                                                                                                                                                                                           859
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        VERSION
KEYWORDS
SOURCE
ORGANISM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  LOCUS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                RESULT 9
AE016978
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ACCESSION
                                                                                                                                                                                                              g
                                                                                                                                                                                                                                              δλ
                                                                                                                                                                                                                                                                           g
                                                                                                                                                                                                                                                                                                                                   g
                                                                                                                                                                                                                                                                                                                                                                       ò
                                                                                                                                                                                                                                                                                                                                                                                                    q
                                                                                                                                                                                                                                                                                                                                                                                                                                  ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                            g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  QΥ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            qq
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ο̈́λ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ÓΥ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                qq
                         g
                                                            δy
                                                                                           ద
                                                                                                                     ò
                                                                                                                                                     g
                                                                                                                                                                                   à
                                                                                                                                                                                                                                                                                                           ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ò
                                                                                                                                                                                                                                          /protein_id="aan41749.1"
//protein_id="aan41749.1"
//db_xref="G1:24050290"
//db_xref="G1:24050290"
//db_xref="G1:24050290"
//db_xref="G1:24050290"
//dranslation="mlwharbehlvkyysgfnwfsyllfraivisyllwaypsnrywcyllyhlysgfoyymnopesshrskrofpfwgsimilfraivisyllwaypsnrywcyllyhlysggvigfyddygrgyrkyprkgtraivisyllwaysyllwaybatol
                                                                                                                                                                                                                                                                                                                8159
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   7868
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            7925
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        7979
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     8039
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 8099
ANVGSMTAAVQVLAEMPGYRVLVVGDMAELGAESEACHVQVGEAAKAAGIDRVLSMGK
QSHAISTASGVGEHFADKTALITRLKSLIAEQQVITIIVKGSRSAAMEEVVRALQENG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      5;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    141
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           261
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      321
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   381
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                441
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             501
                                                                                                                                        Ç
                                                                                                                                                                                                                                                                                                                                                                                                                                                                               identical to
Escherichia
                                                                                                                      /iocus_tag="SF0084"
/nock="Residues 1 to 360 of 360 are 100 pct identical tresidues 1 to 360 of a 360 as protein from Escherichia coli K12 ref: NP_414629.1"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              -----AAGCCGTAGAACGCCACACGGGCAGTCTGAATGATGATGATGATGATGGCGGCAG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             rcarrarcescerescerescesserrrecressesserrrrecressesses
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 AGTATCCGCAGGTGGAAGTGCGGTTGCGGCGAACTCGACGCCGAGTTCCTCTGCTCCGCCC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    262 GCGAACTCTATGTCAGCCCCGGCTTGTCGCTGCGCACCCTGCGCTGGTACAGGCCGCCG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   CGAAAGGCGTGCGCATCTCCGGTGACATCGATCTTCGCCCCGCGAGGCCGAAGGCCCCGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 8040 ATGCCGGAATCGAAATCGTTGGCGATATCGAGCTGTTTTGTCGCGAAGCACAAGCACCGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              TCGTCGCCATCACCGGTTCCAACGCGAAGAGCACCGTGACCACCCTGGTGGGCGAAATGG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           CGGTGGCCGCGGACAAGCGTGTCGCCGTCGGCGAACCTCGGCACCCCGGCGCTCGACC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  TGCCTTTCGCCGTGGTCGATACCCGAGAACCCGCCGGAGCTGGCCACCCTGCGTGCCC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Gaps
                                                                                                                                                                                                                /product="phospho-N-acetylmuramoyl-pentapeptide
transferase?"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      33;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Length 11441;
                                                                                                                                                                                                                                                                                                                                                                                                                                                          /lous_tag="SF0085"
/lous_tag="SF0085"
/note="Residues 1 to 438 of 438 are 99 pct residues 1 to 438 of a 438 as protein from soil K12 ref: NP_414630.1"
/codon_start=1
/transl_table=11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Score 291.2; DB 1;
Pred. No. 6.2e-26;
0; Mismatches 603;
                                                                                                                                                                                                                                                                                                                                                                                                               /locus_tag="SF0085"
7781. .9097
/gene="murD"
                                                                         /locus_tag="SF0084"
6696. .7778
                                                                                                                                                                                   /codon_start=1
/transl_table=11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      20.1%;
ilarity 53.6%;
Conservative
                                                                                                        /gene="mray"
                                                            /gene="mraY"
                                              .9699
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      736;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      7926
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        8160
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  82
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               7809
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              142
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   322
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         202
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                382
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             442
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Matches
                                                gene
                                                                                                                                                                                                                                                                                                                                                                                       gene
                                                                                                                                                                                                                                                                                                                                                                                                                                  CDS
                                                                                           CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        셤
```

à 셤 ŏ g ò ð g ç 셤 à ò

à

```
/translation="MYKYYAPASSANMSVGFDVLGAAVAPVDGALLGDVVTVEAAETF
SCINIGAFFADKLPSEPRENIYVQCWEREPCOELGRQIPVAMTLEKNWFIGSGLGSSACS
VVAALMAMNEHCGKPLNOTRILALMGELEGRISGSIHYDNWPCFLGGWQLMIEENDI
ISOQVPGENEWLWYAPTGINKYSTAERALIPAQYRRQDCIAHGRHLAGFIHACYSRQ
PELAAKLMKDVIAEFYRERLLPGFRQARQAVAEIGAVASGISGSGFTLFALCDKPDTA
3733. 6119
/gene="thr""
                      /jocus_tag="S0003"
/function="enzyme; Amino acid biosynthesis: Threonine"
/note="residues 1 to 310 of 310 are 95.48 pct identical to
residues 1 to 310 of 310 from Escherichia coli K-12 :
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Ç
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  /translation="MKLYNLKDHNEQVSFAQAVTQGLGKNQGLFFPHDLPEFSLTEID
EMLKLDFVTRSAKILSAFIGDEIPQEILEERVRAAFAFPAPVANVESDVGCLELFHGP
TLAFKDFGGRFMAQMLTHIADDKPVTILTATSGDTGAAVAHAFYGLPNVKVVILYPRG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  KISPLQEKLFCTLGGNIETVAIDGDFDACQALVKQAFDDEELKVALGLNSANSINISR
LLAOICYYFENVAOLPOEARNOLVVSPSGNFGDLTAGLLAKSFGLPVKRFIANTNVN
DYPFELHDGGWSPKATQATLSNAMDVSQPNWPRVEELFRKIWQLKELGYAAVDDE
TTQOTWRELKELGYFSEPHAAVAYRALRDQLNPGEYGLFLGTAHPAKFKESVEAILGE
TLDLPKELAERADLPLLSHNLPADFSALRKLMMNHQ"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            /product-"hypothetical protein"
/protein_id-"AAP1552.1"
/db_xref="G10399818"
/translation-"MOSIVLALSLVLVAPMAAQAAEITLVPSVKLQIGDRDNRGYWD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     5242. .5529
/locus_tag="S0005"
5242. .5529
5242. .5529
/note="residues 1 to 65 of 95 are 60.00 pct identical to residues 4 to 68 of 98 from Escherichia coli K-12 : B0005"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        258 of 258 are 100.00 pct identical of 258 from Escherichia coli K-12:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  /function="enzyme; Amino acid blosynthesis: Threonine"
/note="residues 1 to 428 of 428 are 95.56 pct identical
residues 1 to 428 of 428 from Escherichia coli K-12 :
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               5564. .5668
//note="REP" (repetitive extragenic palindromic) element,
contains 2 REP sequences"
complement(5682. .6458)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        GGHWRDHGWWKQHYEWRGNRWHPHGPPPPPRHHKKAPHDHHGGHGPGKHHR"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  /product-"threonine synthase"
/protein_id-"AAP15551.1"
/db_xref-"GI:30039817"
                                                                                                                                                                                                                              /product-"homoserine kinase"
                                                                                                                                                                                                                                            /protein_id="AAP15550.1"
/db_xref="G1:30039816"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               complement(5682. .6458)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      /gene="yaaA"
/locus_tag="s0006"
/note="residues 1 to 2!
to residues 1 to 258 os
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         /locus_tag="S0004"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  /locus_tag="S0006"
                                                                                                                                                                        /codon_start=1
/transl_table=11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  /codon_start=1
/transl_table=11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        /codon_start=1
/trans1_table=11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    /codon_start=1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        3733. .5019
/gene="thrC"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           /gene-"yaaA"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       repeat_region
                                                                                                                                                                                                                                                                                                                                                                                                                                                                              gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             /CEARST 18 1.00 - "MRVLEGGTSVANAERFLRVADILESNAROGOVATVLSAPAKIT
/KLANSI 18 1.00 - "MRVLEGGTSVANAERFLRVADILESNAROGOVATVLSAPAKIT
/KLANAIEKTISGODALPRISDAERIFAELTGLAAQPGFPIAQLKTFVDDFRATILAVGHT
/LESTYDIRESTRALAASTFRADAMLCRGEMSIA TANAGVLERRGHNYTOPPEKLLAVGHT
/LESTYDIRESTRALAASTFRADAMLAGFTAGNEGELVVLGRNGSDYSAAVLAACL
/RADCCETWIDVDOVYTCDPRQVPDARLLKSNSYQEAMEGELVYLERRGILPRAG
/QIPCLIKYTGONPQAPGTLIGASREDEDELPVKGISNLINMAMEVSYSGPGNKGRAAR
/VPAMSRRAISVULTYQSSEYSISFCVPQSDCVRARRANOEEFYLELKGILLEPLAV
/TERLAIISVVGDGNRTLRGISAKFPAALARANINIVAIAQGSSERSISVVVNNDDATT
/GVRTVHOLEVTDGVGGVGGGGGLEDDOLKROOMLKRVHIDERVCGYBNSKA
/LISSVHGLALENWOEELAGAKEPFNLGRLIRLWFYTLLNVYVUDCTSSQQAVADOYAD
/FLREGFHYVTPNKKANTSSNDYYHOLRYAAAKSRRKELYDTNVGGGLPVIENLONLLN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             /locus_tag="S0001"
/fouction="leader; Amino acid biosynthesis: Threonine"
/fonce="residues 1 to 21 of 21 are 100 pct identical to
residues 1 to 21 of 21 from Escherichia coli K-12 : B0001"
/codon_start=1
/transl_table=11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        t
2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        LLILARETGRELELADIEIEPVLPAEFNAEGDVAAFMANLSQLDDLFAARVAKARDEG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               KVLRYVGNIDEDGVCRVKIAEVDGNDPLFKVKNGENALAFYSHYYQPLPLVLRGYGAG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            AGDELVKFSGILSGSLSYIFGKLDEGMSFSEATTLAREMGYTEPDPRDDLSGMDVARK
                                                                                                                                                                                                                                            2 (bases 1 to 290029)
Wel,J., Goldberg,M.B., Burland,V., Venkatesan,M.M., Deng,W.,
Wel,J., Goldberg,M.B., Plunkett,G. III, Rose,D.J., Darling,A.,
Fournier,G., Mayhew,G.F., Plunkett,G. III, Rose,D.J., Darling,A.,
Mau,B., Perna,N.T., Payne,S.M., Runyen-Janecky,L.J., Zhou,S.,
Schwartz,D.C. and Blattner,F.R.
                   Wel,J., Goldberg,M.B., Burland,V., Venkatesan,M.M., Deng,W.,
Fournier,G., Mayhew,G.F., Plunkett,G. III, Rose,D.J., Darling,A.,
Mau,B., Perna,N.T., Payne,S.M., Runyen-Janecky,L.J., Zhou,S.,
Schwartz,D.C. and Blattner,F.R.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             /function="enzyme; Amino acid biosynthesis: Threonine"
/note="residues 1 to 820 of 820 are 98.04 pct identical
residues 1 to 820 of 820 from Escherichia coli K-12 :
B0002"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  /codon_start-1
/transl_table=11
/product="aspartokinase I, homoserine dehydrogenase I"
/protein_id="AAP15549.1"
/db_xref="GI:30039815"
                                                                                                                          Complete Genome Sequence and Comparative Genomics of Shigella flexneri Serotype 2a Strain 2457T Infect. Immun. 71 (5), 2775-2786 (2003)
                                                                                                                                                                                                                                                                                                                                                                                                                        of
USA
                                                                                                                                                                                                                                                                                                                                                                                Direct Submission
Submitted (13-JUN-2002) Genetics Laboratory, University
Wisconsin - Madison, 445 Henry Mall, Madison, WI 53706,
Location,Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                           1. .290029
/organism=Shigella flexneri 2a str. 2457r"
/mol_type="genomic DNA"
/strain="2457r"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            /product-"thr operon leader peptide"
/protein_id-"AAP15548.1"
/db_xref-"GI:30039814"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       /translation="MKRISTTITTITTTGNGAG" 336. .2798 /gene="thrA"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     /db_xref="taxon:198215"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            NDVTAAGVFADLLRTLSWKLGV"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               /locus_tag="S0001"
190. .255
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            /locus_tag="S0002"
336. .2798
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               locus_tag-"S0002"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            /locus_tag="S0003"
2800. .3732
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              /serotype="2a
to 290029)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            /gene="thrL"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         /qene="thrL"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     /gene="thrA"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    gene="thrB"
                                                                                                                                                                                                                                                                                                                                                                                        TITLE
JOURNAL
                                                                                                                                                                                                                           PUBMED
REFERENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  gene
REFERENCE
                         AUTHORS
                                                                                                                                                                                      JOURNAL
                                                                                                                                                                                                                                                                            AUTHORS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            SGS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                        FEATURES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        CDS
                                                                                                                                      TITLE
```

us-09-701-229-1.rge

```
96041
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   96332
                                                                                              95690
                                                                                                                                                              95750
                                                                                                                                                                                                                               95810
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  96215
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    96449
                                                                                                                                                                                                                                                                                               95870
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 96101
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   96275
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   96333 ---GCCCGGAAGTGGCAGAACAAACCGAAACTATGGAACAGGCTATGCGCTTGCTGGCTC 96389
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  96161
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       96509
                                                                                                                                                                                                                                                                                                                                                                                                                                  95922 AGGGCGAAACCTGGCTGCGGGTTAAAGGCGAGAAAGTGCTGAATGTGAAAGAGATGAAAC 95981
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  1038
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   1158
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    1218
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    1278
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     1338
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 TCGGCGCCCCCTGGCGGCGATCGAGGGGCTGGGTGCCGACATCGACGGCAAGCTGGTGC 1098
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      1339 TCAAGAACTTCGAAGAACGCGGACGCCTGTTCGCCAAAGCCGTAGAGGAGCTAGGGGTGAT 1398
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       AE005185 12791 bp DNA linear BCT 21-MAR-2001
Escherichia coli 0157:H7 EDL933 genome, contig 1 of 3, section 9 of
                                                                                                                                                                                                                                                                                                                                                                                                                                                                  918
                                                                                                                                                                                              678
                                                                                                                                                                                                                                                                738
                                                                                                                                                                                                                                                                                                                               798
                                                                                                                                                                                                                                                                                                                                                                                                 828
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                978
                                                                                                                                 621
 501
                                                                 561
                                                                                  95751 GCTACCCGTTTGGTTTACAACAGTATCGTGCGAAAACTGCGCATTTACGAAAACGCGA
                                                                                                                                                                                                                                                                                 739 CGTGCTGGTCGTTCGGCCTGAACAAGCCGGACTTCAAGGCTTTCGGCCTGATCGAGGAAG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                  TCCGTGGCGCCCACAACTATTCCAACGCGCTCGCCGCGCTGGCGCTGGGCCATGCGGTCG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   GCCAGTGGGTACGCGAGCGGCGAGGCGTGACTACTACGACGATTCCAAGGCCACCAACG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  96162 TCGGCAGTACGGAAGCGGCGCTGAATGGCCTG-----CACGTAGACGGCACGCTGCATT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                96216 rerrecreseccearearearesecseacriraseccacresrectrare
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   CGGTGGCCGCGGACAAGCGTGTCGCCGTCGGCGGCAACCTCGGCACCCCGGCGCTCGACC
                                  TGCTGGCCGACGACATCGAGCTGTACGTGGAGCTGTCGAGCTTCCAGCTGGAAACCT
                                                                                                                                 GCGATCGCCTCAACGCCGAGGTGGCGACCGTGCTGAACGTCAGCGAAGACCATATGGATC
                                                                                                                                                               95691 CCTCCAGCTTACAGGCGGTAGCAGCGACCATTCTGAACGTGACGTGAAGATCATATGGATC
                                                                                                                                                                                                GCTAC---GACGGCATGGCTGACTACCACCTGGCCAAGCACCGGGATCTTCCGCGGTGCCC
                                                                                                                                                                                                                                                                GCCAGGTCGTGGTGAATCGCGCCGATGCCCTGACCCGACCGCTGATCGCCGATACCGTGC
                                                                                                                                                                                                                                                                                                                                                                95871 GCTGCGTCAGCTTTGGCGTCAACATGGGTGACTGTCA------CCTGAATCATCAGC
                                                                                                                                                                                                                                                                                                                                                                                                   ACGCCCAGAAGTGGCGTTCCAGTTCGACTGCTGCTGCCGGTTGGCGAACTGAAGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    GCCTGCCGTTCGACGCCATGCTCGGCGCGCTGAAGGCGTTTTCCGGCCTGGCTCATCGCT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     96102 TTGAAGTGGTGCTGGAGCATAACGGTGTGCGCTGGATTAACGATTCAAAAGCGACCAACG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    TGCTCGCCGGCGGAGACGGCAAGGGCCCCGATTTCCATGACCTGCGCGAGCCGGTCGCGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  GCTTCTGCCGGGCGGTGGTACTGCTTGGCCGTGACGCCGGGCTGATTGCCCAGGCACTGG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     GCAACGCGGTACCGCTGGTGCGCGTCGCACGCTGGACGAAGCAGTCCGGCAGGCCGCCG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     AGCTGGCCCGCGAAGGCGATGCGGTGCTGTTGTCGCCGGGCCTGCGCGAGCCTGGACATGT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      GCTGTCGGTGTTGCGCCCCTTCCCGTCGCCGCTGTTGAGCCGGCACGGCATC 1450
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           859
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  616
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     1279
                                                                                                                                                                                                                                                                619
                                                                                                                                                                                                                                                                                                                                                                                                 799
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    919
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   1099
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    1219
   442
                                  95571
                                                                   502
                                                                                                                                 262
                                                                                                                                                                                                  622
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 96042
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   1039
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    1159
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        1399
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       LOCUS
DEFINITION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       RESULT 10
AE005185
                                                                                                                                                                                                                                                                                                                                                           a
                                                                                                                                                                                                                                                                                                                                                                                                                              g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 g
                             g
                                                                                                                               ŏ
                                                                                                                                                              셤
                                                                                                                                                                                              δ
                                                                                                                                                                                                                            q
                                                                                                                                                                                                                                                              Óγ
                                                                                                                                                                                                                                                                                             a
                                                                                                                                                                                                                                                                                                                              δ
                                                                                                                                                                                                                                                                                                                                                                                                 ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                               δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ŏ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       음
                                                                 ò
                                                                                         g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ద
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   95279
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      95510
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      95450
                                                                                                                                                                                                                                                                                                                                                                                             IPEYRKLIDDAVAWAKQQSNDRAQQIVDATDKLAVNIGLEIIKLVPGRISTEVDARLS
YQPRASIARAKRLIKLYNDAGISNDRILIKLASTWGGIRAARQLEKEGINCNLTLLFS
FAQARACABAGVFLISPFVRRILDMYRANTDKKYRAPAREDBEVSVSEIYQYYKEHGY
ETVVMGASFRNIGEILELAGCDRLITAPALLKELABSEGAIERKLSYTGEVKARPARI
TESEFLWQHNQDPMAVDKLABGIRKFAIDQEKLEKMIGDLL"
AQGDNVVINLASDEYFKSVKPKKLNAEIIKPVFLDEKNGKFKIISFYAKKARGLMSRF
IIENRLTKPEQLTGFNSEGYFFDEDSSSNGELVFKRYEQR"
complement(6528. .7958)
                                                                                                                                                                                                                                                                                                                                                                              /translation="MTDKLTSLRQYTTVVADTGDIAAMKLYQPQDATTNPSLILNAAQ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ŝ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                'function="transport; Biosynthesis of cofactors, carriers:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   TCGTTGTCGGCCTCGGCAAGAGCGGCATGTCCCTGGTGCGCTACCTGGCGCGCCGCGGCT 141
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      261
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    321
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     381
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   /note="residues 1 to 195 of 195 are 100.00 pct identical
to residues 1 to 195 of 195 from Escherichia coli K-12 :
B0009"
                                                                                                                                                                               /locus_tag="S0008"
/function="enzyme; Central intermediary metabolism:
Non-oxidative branch, pentose pathway"
/note="residues 1 to 317 of 317 are 100.00 pct identical
to residues 1 to 317 of 317 from Escherichia coli K-12:
B0008"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          142 TGCCTTTCGCCGTGGTCGATACCCGAGAACCCGCCGGAGCTGGCCACCCTGCGTGCCC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      202 AGTATCCGCAGGTGGAAGTGCGTTGCGGCGAACTCGACGCCGAGTTCCTCTGCTCCGCCC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  -----AAGCCGTAGAACGCCACACGGGCAGTCTGAATGATGAATGGCTGATGGCGGCAG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    262 GCGAACTCTATGTCAGCCCCGGCTTGTCGCTGCGCACCCCTGCGCTGGTACAGGCCGCCG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     CGAAAGGCGTGCGCATCTCCGGTGACATCTCTTCGCCCCGCGAGGCGAAGGCCCCGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    95451 ATGCCGGAATCGAAATCGTTGGCGATATCGAGCTGTTTTGTCGCGAAGCACAAGCACCGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Length 290029;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   33;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               /transl_table=11
/product="molybdopterin biosynthesis protein"
/protein_id="AAP15555.1"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   603; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    DB 1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Score 291.2; DB 1
Pred. No. 2.9e-26;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   0; Mismatches
                                                                                                                                                                                                                                                                                                           /transl_table=11
/product="transaldolase B"
/protein_id="AAP15554.1"
/db_xref="G1:30039820"
                                                               /locus_tag="S0007"
/note="point mutation"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             /locus_tag="S0009"
9305. .9892
/gene="mog"
                                                                                                                                           locus_tag="S0008"
237. .9190
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ocus_tag="S0009"
                                                                                                                                                                                                                                                                                                 /codon_start=1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               /codon_start=1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  molybdopterin'
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  20.1%;
53.6%;
                                                                                                                                                                             /gene="talB"
                                                                                                              8237. .9190
/gene="talB"
                                                /gene-"yaaj
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                9305. .9892
/gene="mog"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Query Match 20.1
Best Local Similarity 53.6
Matches 736; Conservative
                                                                                              pseudo,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  82
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   95337
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     322
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 95220
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  gene
                                    gene
                                                                                                                 gene
                                                                                                                                                               CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   å
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 õ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ద
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       õ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 a
```

```
/translation="MEDY" (%)
LGEEGRILAIDRDPQAIAVAKTIDDPRFSIIHGPFSALGEYVAERDLIGKIDGILLDL
GEGGRILAIDRDPQAIAVAKTIDDPRFSIIHGPFSALGEYVAERDLIGKIDGILLDL
GVSSPOLDDPAERGFSFMRDGPLDMRMDPTRGQSAFMLQTAERDLIAWVLKTYGEERF
KRIARAIVERNREQPWTRKELAEVVAATPVKDKFKHPATRTFQAVRIWVSELEE
IEQALKSSLWILAFGGRISIISFHSLEDRIVKRFWRRNSRGPQVPAGLPWTEEQLKKL
GGRQLRALGKLMPGEEEVAENPRARSSVLRIAERTNA"
                                                    /translation-"MFRGATLVNLDSKGRLSVPTRYREQLLENAAGGMVCTIDIHHPC
LLLYPLPEWEIIEQKLSRLSSMNPVERRVQRLLLGHASECQMDGAGRLLIAPVLRQHA
GLTKEVMLVGQFNKFELMDETTWHQQVKEDIDAEQLATGDLSERLQDLSL"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 /product="septum formation; penicillin-binding protein 3; peptidoglycan synthetase" /protein-da-aAG5438.1" /protein-da-1212787 /protein-da-121278 /protein-
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            /protein_id="AAG54387.1"
Abaxref="01:12312786"
/translation="RISRVTERLESKYKGSMGSHERHALPGVIGDDLLRFGKLPLCLFI
CILLTAVTVYTTAHHTRLLTRQREQLVLERDALDIEWRNLILEENALGDHSRVERIAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 NSPSYNDNNILSGTPKEAMRNRTITUVFEPGSTVKPMVVMTALQRGVVRENSVLNTIPY
RINGHEIKDVARYSELTLTGVLQKSSNVGVSKLALAMPSSALVDTYSRFGLGKATNLG
LVGERSGLYPPCKORNSDIERATFSFGYGLMYPPLQLARVYATTGSYGTYRPLSTTKVD
PPPGERVFPESIVTVVJHMESVALPGGGGVKAAIKGYRIAIKTGTAKKVGPDGRY
NKYTAYTAGVAPASOPRFALVVVINDPQAGKYYGGAVSAPVFGAIMGGVLRTMNIEPD
ALTTGDKNEFVINQGEGTGGRS"
                                                                                                                                                                                                                                                                                                                                                                                                                      /function="orf; Not classified"
//note="Residues 1 to 313 of 313 are 100.00 pct identical
to residues 1 to 313 of 313 from Escherichia coli K-12
Strain MG1655: B0082"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          /function="phenotype; Cell division"
/note="Residues 1 to 121 of 121 are 100.00 pct identical
to residues 1 to 121 of 121 from Escherichia coli K-12
Strain MG1655: B0083"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    /function="enzyme; Cell division"
//note="Residues 1 to 588 of 588 are 100.00 pct identical
to residues 1 to 588 of 588 from Escherichia coli K-12
Strain MG1655: B0084"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   /product-"cell division protein; ingrowth of wall septum"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  /product="putative apolipoprotein"
/protein_id="AAG54386.1"
/db_xref="GI:12512785"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    5210. .6697
/gene="murE"
/note="gynonym: 20095"
5210. .6697
/gene="murE"
                                                                                                                                                                                                                                                                  /note="synonym: 20092"
2138. .3079
/gene="yabC"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      /note="synonym: Z0093"
3076, .3441
/gene="ftst"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           /note="synonym: 20094"
3457. .5223
/gene="fts!"
         /db xref="GI:12512784"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    EKLOMOHVDPSOENIVVOK"
3457. .5223
/gene-"fts!"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          /transl_table=11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       /transl_table=11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                /codon_start=1
/transl_table=11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          /codon_start=1
                                                                                                                                                                                     2138. .3079
/gene="yabc"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              3076. .3441
/gene="ftsL"
                                                                                                                                                                                                    gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  gene
                                                                                                                                                                                                                                                                                                                                     CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                /protein_id="Aag54384.1"
| Ab_xref="G1:12512783"
| Arbaration="Wilderakoysrthasyvingkakoyrvsdktyvavvre
HNYHPNAVAaglragrafigivipdlentsytrianylergargargrolliacsedg
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 PONEWRCIEHLLOROVDAIIVSTSLPPEHPFYQRWANDPFPIVALDRALDREHFTSVV
SADODDABMALBELRKFPAETVLYLGALPELSVSFLRROGFRYAWKDDPREVHFLYAN
SYERRAAQLEKWHTETHPRWODALFTYSFALLOGVWHOYTLRYGKLFSDLAIATFGDN
ELLDFLQCPVLAVAQRHRDVAERVLEIVLASLDEPRKFYGITRIKRNLYRROYLSRS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       /function="orf; Unknown function"
/note="Residues 1 to 152 of 152 are 99.34 pct identical to
residues 1 to 152 of 152 from Escherichia coli K-12 Strain
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      /note="Residues 1 to 334 of 334 are 100.00 pct identical to residues 1 to 334 of 334 from Escherichia coli K-12 Strain MG1655: B0080" /codon_start=1
                                                                                                                                                                                                                                                                                Bacteria; Proteobacteria; Gammaproteobacteria; Enterobacteriales;
Enterobacteriaceae; Escherichia.
                                                                                                                                                                                                                                                                                                                                                        1 (bases 1 to 12791)
Perna, N.T., Plunkett, G. III, Burland, V., Mau, B., Glasner, J.D.,
Perna, N.T., Plunkett, G. III, Burland, V., Mau, B., Glasner, J.D.,
Post, D., Mayhew, G.F., Evans, P.S., Gregor, J., Kirkpatrick, H.A.,
Postal, G., Hackett, J., Klink, S., Boutin, A., Shao, Y., Miller, L.,
Grotbeck, E.J., Davis, N.W., Lim, A., Dimalanta, E., Potamousis, K.,
Welch, R.A. and Blattner, F.S., Lin, J., Yen, G., Schwartz, D.C.,
Genome sequence of enterchaemorrhagic Escherichia coli 0157:H7
Nature, 409 (6819), 529-533 (2001)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Total 
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               /product="transcriptional repressor of fru operon and others".
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   /function-"regulator; Energy metabolism, carbon: Glycolysis"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             /organism="Escherichia coli 0157:H7 EDL933"
/mol_type="genomic DNA"
/strain="EDL933"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             /transl_table=11
/product="orf, hypothetical protein"
/protein_id="AAG54385.1"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             /serotype="0157:H7"
/db_xref="taxon:155864"
/note="enterohemorrhagic"
72..1076
/gene="frun"
/note="synonym: 20090"
72..1076
                                                                                                                                                                                     Escherichia coli 0157:H7 EDL933
Escherichia coli 0157:H7 EDL933
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 /note-"synonym: 20091"
1678. .2136
/gene-"yabB"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               /transl_table=11
                                               AE005174
1 GI:12512782
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      /codon_start=1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        /gene="fruR"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      /gene-"yabB"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            1, .12791
155.
AE005185 AE0
AE005185.1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   21074935
                                                                                                                                                                                                                                ORGANISM
                                           ACCESSION
VERSION
                                                                                                                                                                                                                                                                                                                                                                      REFERENCE
AUTHORS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        TITLE
JOURNAL
MEDLINE
PUBMED
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                TITLE
JOURNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    AUTHORS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                gene
                                                                                                                                     KEYWORDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      FEATURES
                                                                                                                                                                                          SOURCE
```

```
10040
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             10154
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   10100
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      10271
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               10448
                                              9449
                                                                                                                                          9509
                                                                                                                                                                                                                                  9569
                                                                                                                                                                                                                                                                                                                              9629
                                                                                                                                                                                                                                                                                                                                                                                                                           6896
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     9749
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 9809
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           9860
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    9980
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        1038
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  1098
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            1158
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      1218
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                1278
                                                                                                                                                                                        501
                                                                                                                                                                                                                                                                                  561
                                                                                                                                                                                                                                                                                                                                                                            621
                                                                                                                                                                                                                                                                                                                                                                                                                                                                         678
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             798
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       858
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 918
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             978
                                                                                            441
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     738
  381
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     9690 GCTATCCGTTTGGTTTACAGCAATACCGTGCGGCAAAATTGCGTATTTACGAAAATGCGA
                                                                                                                       9810 GCTGCGTCAGCTTTGGCGTCAACATGGGTGACTATCA------CCTGAATCATCAGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          9390 ATGCCGGAATCGAAATCGTTGGCGATATCGAGCTGTTCTGTCGCAAAGCACAAGCACGA
                                                                                                                                                                                                                                                                                                                                                                                                       CGTGCTGGTCGTTCGGCCTGAACAAGCCGGACTTCAAGGCTTTCGGCCTGATCGAGGAAG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ACGGCCAGAAGTGGCTGGCGTTCCAGTTCGACAAGCTGCTGCCGGTTGGCGAACTGAAGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   TCCGTGGCGCCCCACAACTATTCCAACGCGCTCGCCGCGCTGGCCCTGGGCCATGCGGTCG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              9921 TTTCCGGGCAGCATAAATAACAACAATGCGCTGGCGGCGCTGGCGCTGGCAGATGCCGAG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        9981 GETTACCGCGTGCCAGCACGCTAAACGTTAACCACTTCACTGGTCTGCCGCATCGCT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      10041 TTGAAGTTGTGCTGGAGCATAACGCCGTACGTTGGATTAACGATTCGAAAGCGACCAACG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   CGAAAGGCGTGCGCATCTCCGGTGACATCGTCTTCGCCCGCGGGGGGGAAGGCCCCGA
                                                                                              TCGTCGCCATCACCGGTTCCAACGCGAAGAGCACCGTGACCACCCTGGTGGCGGAAATGG
                                                                                                                                                                                        CGGTGGCCGCGGACAAGCGTGGCCGTCGGCGCAACCTCGGCACCCCGGCGCTCGACC
                                                                                                                                                                                                                      TGCTGGCCGACGACGTCGAGCTGTACGTGGAGCTGTCGAGCTTCCAGCTGGAAACCT
                                                                                                                                                                                                                                                                                                                                                                            GCGATCGCCTCAACGCCGAGGTGGCGACCGTGTGAACGTCAGCGAAGACCATATGGATC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                           GCTA---CGACGGCATGGCTGACTACCACCTGGCCAAGCACCGGATCTTCCGCGGTGCCC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     GCCAGGTCGTGGTGAATCGCGCCGATGCCCTGACCCGACCGCTGATCGCCGATACCGTGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 9750 AAGTITGTGTCGTCAATGCTGATGATGCCTTAACAATGCCGATTCGCGGTGCGGATGAAC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             GCCTGCCGTTCGACGCCATGCTCGGCGCGCTGAAGGCGTTTTCCGGCCTGGCTCATCGCT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        GCCAGTGGGTACGCGAGCGGCAGGCGTGAGCTACTACGACGATTCCAAGGCCACCAACG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  TCGCCCCCCCCTGGCGGCGATCGAGGGGCTGCTGCCGACATCGACGGCAAGCTGGTGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            TGCTCGCCGGCGGAGACGGCAAAGGCCCCGATTTCCATGACCTGCGCGAGCCGGTCGCGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        GCTTCTGCCGGGCGGTGGTACTGCTTGGCCGTGACGCCGGGCTGATTGCCCCAGGCACTGG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    GCGATAACGTACGTCTGTATTGTTTCGGTCGTGACGCCGTGCAGCTGGCGGCGCTAC---
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    GCAACGCGGTACCGCTGGTGCGCTCGCACGCTGGACGAAGCAGTCCGGCAGGCCGCCG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            AGCIGGCCCGCGAAGGCGAIGCGGIGCTGTTGICGCCGGCCTGCGGCGTGGACAIGT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    TCAAGAACTTCGAAGAACGCGGACGCCTGTTCGCCAAAGCCGTAGAGGAGCTAGCGTGAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     GCTGTCGGTGTTGCGCCCCTTCCCGTCGCCGCTGTTGAGCCGGCACGCCATC 1450
                                                                                                                                                                                                                                    9510
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          1279
                                                                                                                                          9450
                                                                                                                                                                                        442
                                                                                                                                                                                                                                                                                                                              9570
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   859
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             919
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        979
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  1039
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            1099
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      1159
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         1339
  322
                                                                                            382
                                                                                                                                                                                                                                                                                  502
                                                                                                                                                                                                                                                                                                                                                                            562
                                                                                                                                                                                                                                                                                                                                                                                                                                                                           622
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     619
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               739
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         799
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    10215
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  1219
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       0389
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     1399
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                10272
                                                                                                                                                                                                                                                                                                                                                                                                                        g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            gg
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    qq
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      g
                                      g
                                                                                            δ
                                                                                                                                     q
                                                                                                                                                                                    δ
                                                                                                                                                                                                                               οqα
                                                                                                                                                                                                                                                                                  δ
                                                                                                                                                                                                                                                                                                                            g
                                                                                                                                                                                                                                                                                                                                                                          δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ŏ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           οy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        QQ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           δy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              οy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             οy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Qγ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ÓΛ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ద
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              /codon_start=1
//transl_table=11
//transl_table=11
//product="0-alanine:D-alanine-adding enzyme"
/product="0-alanine:D-alanine-adding enzyme"
/protein_id="AAG54390.1"
/pro
                                                                                                                                   /transl_table=11
/product="meso-diaminopimelate-adding enzyme"
/product="meso-diaminopimelate-adding enzyme"
/protein.id="AaG54389:1"
/db_xref="G1:1212788"
/translation="MADRNLRDLLAPWVPDAPSRALREMTLDSRVAAAGDLEVAVVGH
/db_xref="G1:121278"
/translation="MADRNLRDLLAPWVPDAPSRALREMGYPVTLSGLMERLSALAGREY
HEPSDNLXXVGTGTARTTTQLLAGWSQLLGETSAVMGTVGNGLLGRKYIPTENTTG
SAVDYQHELAGLVPGDARTCAMEYSSHGLVQHRVAALKFAASYFTNLSRDHLDYHGDM
EHYEAAKWILYSEHHGGQAIINADDEVGRRWLAKLPDAVAVSMEDHINPNCHGRWLKA
                                           495 of 495 are 98.98 pct identical to 495 from Escherichia coli K-12 Strain
                                                                                                                                                                                                                                                                                                                                                    TEVNYHDSGATIRFSSSWGDGEIESHLMGAFNVSNLLLALATLLALGYPLADLLKTAA
RLQPVCGRMEVFTAPGKPTVVVDYAHTPDALEKALQAARLHCAGKLWCVFGCGGDRDK
GKRPLMGAIAEEFADVAVYTDDNPRTEEPRAIINDILAGMLDAGHAKVMEDRAEAVTC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            of 452 are 99.33 pct identical to from Escherichia coli K-12 Strain
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   LPGRHNIANALAAAALSMSVGATLDAIKAGLANLKAVPGRLFPIQLÄENQLLLDDSYN
ANVGSMTAAVQVLAEMPGYRVLVVGDMAELGAESEACHVQVGEAAKAAGIDRVLSVGK
QSHAISTASGVGEHFAEKTALITRLKSLIAEQQVITILVKGSRSAAMEEVVRALQENG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        /note="Residues 1 to 360 of 360 are 99.72 pct identical to residues 1 to 360 of 360 from Escherichia coli K-12 Strain
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          9218
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      9275
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    3
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        201
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    261
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              321
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         TGCCTTTCGCCGTGGTCGATACCCGAGAACCCGCCGGAGCTGGCCACCCTGCGTGCCC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 9219 TGACGCCGCGCGTTATGGATACGCGTATGACACCGCCTGGCCTGGATAAATTACCCG---
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            GCGAACTCTATGTCAGCCCCGGCTTGTCGCTGCGCACCCCTGCGCTGGTACAGGCCGCCG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          AGTATCCGCAGGTGGAAGTGCGTTGCGGCGAACTCGACGCCGAGTTCCTCTGCTCCGCCC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              -----AAGCCGTAGAACGCCACACGGGCAGTCTGAATGATGGCTGATGGCGGCAG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Gaps
function="enzyme; Cell envelop: Murein sacculus,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        sacculus,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               /function="enzyme; Cell envelop: Murein sacculus
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                33;
                                                                                                                                                                                                                                                                                                                                                                                                               AVWQAKENDVVLVAGKGHEDYQIVGNQRLDYSDRVTVARLLGVIA | 6694 . . . 8052 /gene="murf" |
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Score 288; DB 1; Length 12791;
Pred. No. 1.5e-25;
0; Mismatches 605; Indels 33
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            /function="enzyme; Cell envelop: Murein
peptidoglycan"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            to 452 (
of 452 1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               /note="synonym: 20097"
8046. .9128
/gene="mraY"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            /note="synonym: 20096"
6694. .8052
                                              양당
                                         /note="Residues 1 residues 1 to 495 MG1655: B0085"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          /note="Residues 1
residues 1 to 452 MG1655: B0086"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       peptidoglycan"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           /gene="murF"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               19.9%;
llarity 53.5%;
Conservative (
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             8046. .9128
/gene="mray"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        734;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       9159
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              9276
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      142
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           82
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                202
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                   gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     윱
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          δ
```

a

```
LESTYDIAESTRRIAASRIPADHMYLMAGFTAGNEKGELVVLGRNGSDYSAAVLAACL
RADCCEIWTDVDGVYTCDPROVPDARLLKSNSYOGAMELSYRGAKULHRRITIPLAGF
QIPCLIKNTGNPQAPGTLIGASRDEDELPVRGISNLNNMAMFSVSGPGMKGWYGMAAR
VFAAMSRARISVVLTGASSEYSISKCVPQSOCVRABERAWOEEFYLEIKEGLLEPLAV
TERLAIISVGDGMRTLRGISAKFFAALARANINIVAIAGCSSERSISVVNNDDATT
GVRTHOMLFRYDOVIEVYTOVGGVGGALLEDLKRQOSWLKNRHIDLRVCGVANSKA
LLTNVWGLNLENWOGELAQAREPFILGELRKEYHLLNVTVGTSSQAVADOYAD
FLREGFHYVTPNKKANTSSMDYYHLLRHAAEKSRRKELYDTNVGAGLPVIENLONLLN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           /translation-"MVKVYAPASSANMSVGFDVLGAAVTPVDGALLGDVVTVESAETF
SLNNLGRFADKLPSEPRENIYYOCWERFCQELGKQIPVAMTLEKNMPIGSGLGSSACS
SLNNLGRFADKLPSEPRENIYYOCWERFCQELGKQIPVAMTLEKNMPIGSGLGSSACS
SLNALMAMNHENGKPLADMSELGRISGSIHYDNVAPCFLGGWQLMTEENDI
ISQQVPGFDEWLWVLAYPERCHSOFFRAILPAQYRRQDCIAHGRHLAGFIHACYSRQ
PELAAKLMKDVIAPBYRRELLDGKRARALLPAQYRRQDCIAHGRHLAGFIHACYSRQ
PRAADWLGKNYLQNQEGFVHICRLDTAGARALEN"

AF51. :5037
/gene-"ECS0004"

/gene-"ECS0004"
                                                                                                                                   /note-"similar to THRL_ECOLI g1|1786182 percent similarity 100 in 21 aa, but has 6 additional residues (Conserved in E.coll K-12)"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             /product-"aspartokinase I-homoserine dehydrogenase I"
/protein_id="BAB33425.1"
/db_xref="G1:13359458"
/translation="MRVLKFGGTSVANAERFLRVADILESNARQGQVATVLSAPAKIT
NHLVAMIEKTISGODALPNISHBARFRAELLTGLAAAQPGFPLAQLKTFVDQEFRQIK
HVLHGISLLGQCPDSINAALICRGEKMSIAIMAGVLEARGHNYTVIDPVEKLLAVGHY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    AGDELMKFSGILSGSLSYIFGKLDEGMSFSEATTLAREMGYTEPDPRDDLSGMDVARK
LLILARETGRELELADIEIEPVLPAEFNAEGDVAAFMANLSQLDDLFAARVAKARDEG
KVLRYVGNIDEDGVCRVKIAEVDGNDPLFKVKNGENALAFYSHYYQPLPLVLRGYGAG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       2818. 3750

//gene="ECS0003"

2818. 3750

/gene="ECS0003"

/fote="stallar to THRB_ECOLI gil1786184 percent identity

/codon_start=1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            /note-"similar to THRA_ECOLI gi|1786183 percent identity 99 in 820 aa (Conserved in E.coli K-12)" /codon_start=1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                /note-"similar to THRC_ECOLI 91|1786185 percent identity 99 in 428 aa (Conserved in E.coli K-12)"
                                                                                                                                                                                                                                                                                                                                                                          /translation="MKRISTTITTITTITITITGNGAG" 354. .2816
                                                                                                                                                                                                                                                                                                                      peptide'
                                                                                                                                                                                                                                   /codon_start-1
/evidence=not_experimental
/transl_table=11
/product="thr operon leader pe
/protein_id="BAB33424.1"
/db_xref="GI:13359457"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 /product="threonine synthase"
/protein_id="BAB33427.1"
/db_xref="GI:13359460"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   /product="homoserine kinase"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      /evidence=not_experimental/transl_table=11
     /sub_strain="RIMD 0509952"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               /evidence=not_experimental/transl_table=11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             /evidence-not_experimental/transl_table=11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         /protein_id="BAB33426.1"
/db_xref="GI:13359459"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    NDVTAAGVFADLLRTLSWKLGV"
                              -"taxon:83334"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                       354. .2816
/gene="ECs0002"
                                                                          /gene="ECs0001"
190. .273
                                                                                                                                 /gene="ECS0001"
/note="similar t
                                                                                                                                                                                                                                                                                                                                                                                                                                               /gene="ECs0002"
354. .2816
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         /codon_start=1
                              /db_xref
190...273
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                gene
                                                            gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     gene
                                                                                                           CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                             CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 CDS
                                                                                                                                                                                                                                                                                                                                                                                        1 (sites)

Wakino,K., Yokoyama,K., Kubota,Y., Yutsudo,C.H., Kimura,S.,
Makino,K., Yokoyama,K., Kubota,Y., Yutsudo,C.H., Kimura,S.,
Kurokawa,K., Ishil,K., Hayashi,T., Yasunaga,T., Honda,T.,
Sasakwa,C. and Shinagawa,H.

Complete nucleotide sequence of the prophage VT2-Sakai carrying the
verotoxin 2 genes of the enterohemorrhagic Escherichia coli 0157:H7
derived from the Sakai outbreak

Genes Genet. Syst. 74 (5), 227-239 (1999)
                                                                                                                                                            07-MAR-2001
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         carrying the
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Direct Submission
Submitted (26-JUN-2000) Ken Kurokawa, Osaka University, Genome
Information Research Center; 3-1, Yamadaoka, Suita, Osaka 565-0871,
Japan (B-mail:keagen-lifo.osaka-u.ac.jp,
URL:http://www.gen-info.osaka-u.ac.jp/, Tel:81-6-6879-8365,
Fax:81-6-6879-2047)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   2 (sites)
Ohnishi,M., Murata,T., Nakayama,K., Kuhara,S., Hattori,M.,
Kurokawa,K., Yasunaga,T., Yokoyama,K., Makino,K., Shinagawa,H. and
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     3 (sites)
Yokoyama,K., Makino,K., Kubota,Y., Watanabe,M., Kimura,S.,
Yutsudo,C.H., Kurokawa,K., Ishil,K., Hattori,M., Abe,H., Iida,T.,
Yamamoto,K., Hayashi,T., Yasunaga,T., Honda,T., Sasakawa,C. and
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Ohnishi, M., Kurokawa, K., Makino, K., Yasunaga, T., Shinagawa, H. and
                                                                                                                                                                                                                                                                                                                                         Bacteria; Proteobacteria; Gammaproteobacteria; Enterobacteriales;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Comparative analysis of the whole set of rRNA operons between an enterohemorrhagic Escherichia coli 0157:H7 Sakai strain and an Escherichia coli K-12 strain MG1655 Syst. Appl. Microbiol. 23 (3), 315-324 (2000)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          4 (sites)
Hayashi,T., Makino,K., Ohnishi,M., Kurokawa,K., Ishii,K.,
Yokoyama,K., Han,C.-G., Ohtsubo,E., Nakayama,K., Murata,T.,
Tanaka,M., Tobe,T., Iida,T., Takami,H., Honda,T., Sasakawa,C.,
Ogasawara,N., Yasunaga,T., Kuhara,S., Shiba,T., Hattori,M. and
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Complete genome sequence of enterohemorrhagic Escherichia coli 0157:H7 and genomic comparison with a laboratory strain K-12 DNA Res. 8 (1), 11-22 (2001)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Complete nucleotide sequence of the prophage VTI-Sakai carryir
Shiga toxin 1 genes of the enterchemorrhagic Escherichia coli
0157:H7 strain derived from the Sakai outbreak
Gene 258 (1-2), 127-139 (2000)
10449 GCGTTTATCTCTCCCTCGCCTGAAAATGCCGCGCCTGCCAGGATTCAGTATC 10500
                                                                                                                                         AP002550 281530 bp DNA linear BCT 07-N
Escherichia coli 0157:H7 DNA, complete genome, section 1/20.
AP002550 BA000007
AP002550.1 GI:13359456
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   1. .281530
/organism="Escherichia coli 0157:H7"
/mol type="genomic DNA"
/strain="0157:H7"
                                                                                                                                                                                                                                                                                                                                                                     Enterobacteriaceae; Escherichia.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Location/Qualifiers
                                                                                                                                                                                                                                                                                     Escherichia coli 0157:H7
Escherichia coli 0157:H7
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        (bases 1 to 281530)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    genome project
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Shinagawa, H.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Hayashi,T
Direct Sub
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Hayashi, T
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           20564182
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             10734605
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        source
                                                                                                                                                                                                                                                                                     SOURCE
ORGANISM
                                                                                                                                                         LOCUS
                                                                                                                                                                                                        ACCESSION
VERSION
KEYWORDS
                                                                                                                                                                                                                                                                                                                                                                                          REFERENCE
AUTHORS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            PUBMED
REFERENCE
AUTHORS
                                                                                                     RESULT 11
AP002550
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        JOURNAL
MEDLINE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              MEDLINE
PUBMED
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             REFERENCE
AUTHORS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     TITLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      MEDLINE
PUBMED
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 AUTHORS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        JOURNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     REFERENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     JOURNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         AUTHORS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             PUBMED
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           JOURNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          REFERENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              COMMENT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            TITLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              TITLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      TITLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            TITLE
```

101950

381

102070

501

441

102130

102190

561

102250

621

102310

738

678

102370

798

102421

828

102541

918

978

102601

102661 1098

1038

102832

1278

102775

```
---GCCCGGAAGTGGCAGAACAAACTATGGAACAGGCGATGCGCTTGCTGGTC 102889
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1279 AGCTGGCCCGCGAAGGCGATGCGGTGCTGTTGTCGCCGGCCTGCGCGCGTGGACCTGGACATGT 1338
                                                                                                        TCGGCGCCGCCCTGGCGGCGGCGTGGGTGCCGACATCGACGGCAAGCTGGTGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           02716 TGTGCTGGGCGGCGATGGTAAATCGGCGGGACTTTAGCCCACTGGCGCGTTACCTGAATG
AGTATCCGCAGGTGGAAGTGCGTTGCGGCGAACTCGACGCCGAGTTCCTCTGCTCCGCCC
                                       ---AAGCCCTAGAACGCCACACGGCCAGTCTGAATGATGATGCTGATGCCGCCAG
                                                                                  GCGAACTCTATGTCAGCCCCGGCTTGTCGCTGCGCACCCCTGCGCTGGTACAGGCCGCCG
                                                                                                                                                                    CGAAAGGCGTGCGCATCTCCGGTGACATCTCTTCGCCCGCGAGGCGAAGGCCCCGA
                                                                                                                                                                                                            ATGCCGGAATCGAAATCGTTGGCGATATCGAGCTGTTCTGTCGCGAAGCACAAGCACCGA
                                                                                                                                                                                                                                                      TCGTCGCCATCACCGGTTCCAACGCGAAGAGCACCGTGACCACCCTGGTGGGCGAAATGG
                                                                                                                                                                                                                                                                                                                                        CGGTGGCCGCGGACAAGCGTGTCGCCGTCGGCGCAACCTCGGCACCCCGGCGCTCGACC
                                                                                                                                                                                                                                                                                                                                                                                102071 CGAAÄAGCGGCGGGGTTAACGTTGGTGTGGGTGGCAATATTGGCCTGCCCGCGTTGATGC
                                                                                                                                                                                                                                                                                                                                                                                                                          TGCTGGCCGACGACATCGAGCTGTACGTGTTGGAGCTGTCGAGCTTCCAGCTGGAAACCT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            GCGATCGCCTCAACGCCGAGGTGGCGACCGTGCTGAACGTCAGCGAAGACCATATGGATC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    102191 CCTCCAGCTTACAGGCGGTAGCAGCGACCATTCTGAACGTGAACGATCATATGGATC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              622 GCTA----CGACGGCATGGCTGACTACCACCTGGCCAAGCACCGGATCTTCCGCGGTGCCC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      102251 GCTATCCGTTTGGTTTACAGCAATACCGTGCGGCAAAATTGCGTATTTACGAAAATGCGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                679 GCCAGGTCGTGGTGAATCGCGCCGATGCCCTGACCCGACCGCTGATCGCCGATACCGTGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        739 CGTGCTGGTCGTTCGGCCTGAACAAGCCGGACTTCAAGGCTTTCGGCCTGATCGAGGAAG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          102371 GCTGCGTCAGCTTTGGCGTCAACATGGGTGACTATCA------CCTGAATCATCAGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ACGGCCAGAAGTGGCTGGCGTTCCAGTTCGACAAGCTGCTGCCGGTTGGCGAACTGAAGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      GCCTGCCGTTCGACGCCATGCTCGGCGCGCTGAAGGCGTTTTTCCGGCCTGGCTCATCGCT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             GCCAGTGGGTACGCGGCGGCGGGGGGGGGTACTACGACGATTCCAAGGCCACCAACG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     102602 TTGAAGTTGTGCTGGAGCATAACGGCGTACGTTGGATTAACGATTCGAAAGCGACCAACG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       TGCTCGCCGCGGAGACGCCAAGGGCCCCGATTTCCATGACCTGCGCGAGCCGGTCGCGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     GCTTCTGCCGGGCGGTGGTACTGCTTGGCCGTGACGCCGGGCTGATTGCCCCAGGCACTGG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               1219 GCAACGCGGTACCGCTGGTGCGCGTCGCAACGCTGGACGAAGCAGTCCGGCAGGCCGCCG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      799
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           919
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          979
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 1099
                                                                                                                                                                                                                                                                                                                                      442
                                                                                                                                                                                                                                                                                                                                                                                                                          502
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            562
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        859
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               1039
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     1159
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               102776
202
                                                                                  262
                                                                                                                                                                                                                                                      382
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   102833
                                                                                                                                                                 322
                                       101837
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     qq
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            qq
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ద
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    PP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               g
                               Вb
                                                                               δ
                                                                                                                       엄
                                                                                                                                                                 δ
                                                                                                                                                                                                         g
                                                                                                                                                                                                                                                      ò
                                                                                                                                                                                                                                                                                           염
                                                                                                                                                                                                                                                                                                                                      ò
                                                                                                                                                                                                                                                                                                                                                                           g
                                                                                                                                                                                                                                                                                                                                                                                                                          à
                                                                                                                                                                                                                                                                                                                                                                                                                                                         qq
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Ω
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 QQ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ŏ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   EMLKLDFVTRSAKILSAFIGDEIPOEILEERVRAAFAFPAPVANVESDYGCLEIFHGP
TLARKDGFGRWAQMITHIAGNGFWTITAFGGGTGAAVAHAYGLEWKWYILYPRG
KISPLOEKLECTLGGUNETVAIDGDPDACQALVKQARDDEELKVALGINSANSINISR
LLAQICYYFEAVAQLPQEARNQLVVSVPSGNFGDLTAGLLAKSLGLWKRFISANINSR
DTVPRRLHACGWSPKATQATLSNAMDYSQPNNMSYEDELFRKIWQLKELGYAAVDDE
TLQOTMREIKELGGYSEPHAAVAYRALEROUNPGEYGLFLGTAHPAKFKESVEAILGE
TLDLPKELABRADLPLLSHNLPADFAALRKLMMNHQ"
                                                                                                                                                                                                                                                                                                                                                     /product-"hypothetical protein"
/protein_id="RAB33428.1"
/b_xref="G1:13359461"
/translation="kKM9GSTVLALSLVLVAPMATQAAEITLVPSVKLQIGDRDNRGY
YWDGGHWRDHGWWXQHYEWRGNRWHPHGPPPPPRHHKKAHHDHGGHGPGKHHR"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              /evidence=not_experimental
/transl_table=11
/product="hypothetical protein"
/protein_id="mas3429.1"
/db_xref="GI:13359462"
/translation="MLILISPAKTLDYQSPLTTTRYTLPELLDNSQQLIHEARKLTPP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          QISTLMRISDKLAGINAARFHDWQPDFTPENARQAILAFKGDVYTGLQAETFSEDDFD
FAQQHLRMLSGLYGVLRPLDLMQPYRLEMGIRLENARGKDLYQFWGDIITNKLNBALA
AQGDNVVINLASDEYFKSVRPKKLNAEIIKPVFLDERNGKFKIISFYAKKARGLMSRF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  /product-Toutalive inner membrane transport protein"
/protein.id-"BAB33430.1"
/db_xref="G1:1339463"
/translation-"MPDFFSFINSVLWGSVMIYLLFGAGGWFTFRTGFVQFRYIRQFG
KSLKNSIHPQPGGLTSFQSLCTSLAARVGSGNLAGVALAITAGGFGAVFWMWVAAFIG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          MATSFAECSLAQLYKERDYNGQFRGGPAWYMARGLGMRWMGYLEAVELLIAYGITES
VQANNVARALSFSFDFPPLVTGIILAVFALLAIIRGLHGVARLMQGFVPLMAIIWVLI
STVICVIIGQLPHVIWSIFESAFGWQBAAGGAAGYTLSQAITNGFQRSWFSREAGMG
STVAAAAAAAASWPPAPAQUVQMIGIFIDTLVICTASAMLILLAGNGTTYMPLEGIQ
LIQKAARVLMGSWGAEFVTLVYIFFAFSKIYANYIYAENNLFFLKINNFKAIMCLRIC
TFATVIGGTLLSLPLAWQLADIIMACMAITNITAILLSSPVVHTIASDYLRQRKLGVR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             201
                                                                                                                                                                                                                                             /gcm. jamilar to B0005_ECOLI gi]1786186 percent identity fin 98 aa (Conserved in E.coli K-12)" /codon_start=1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               /note="similar to YAAA_ECOLI gi|1786187 percent identity 99 in 258 aa (Conserved in E.coli K-12)" /codon_start=1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                gi|1786188 percent identity coli K-12)"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         TGCCTTTCGCCGTGGTCGATACCCGAGAGAACCCGCCGGAGCTGGCCACCCTGCGTGCCC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 33;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Score 288; DB 1; Length 281530;
Pred. No. 6.9e-26;
; Wismatches 605; Indels 33;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        IIENRLTKPEQLTGFNSEGYFFDEASSSNGELVFKRYEQR
Complement(6546. .7976)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            /note="similar to YAAJ_ECOLI
99 in 476 aa (Conserved in E.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           PVFDPLRYPDIGRQLSRDAWDDVSQE"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                /evidence=not_experimental
/transl_table=11
                                                                                                                                                                                                                                                                                                             /evidence=not_experimental
/transl_table=11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                complement(5700. .6476)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    /gene="ECs0006"
complement(5700. .6476)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        complement(6546. .7976)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          0;
                                                                                                                                                               5251. .5547
/gene="ECs0005"
5251. .5547
                                                                                                                                                                                                         5251. .5547
/gene="ECs0005"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                /dene="ECs0006"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              /dene="ECS0007"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              /gene="ECs0007"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          /codon_start=1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  19.9%;
ilarity 53.5%;
Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             734;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Query Match
Best Local S
Matches 734
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           142
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       82
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 101720
                                                                                                                                                                    gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                  gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        CDS
                                                                                                                                                                                                         CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               qq
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               g
```

셤 ò g δ g

```
/translation="MKNIRCRRIFISTKGNEVTTMRVLKFGGTSVANAERFLKVADJI

ERNARQGOVATVLSAPAKTTMHLVAHTEKTISGODALDNISDARRIFAELLTGLAAA

OPGFPLAGLKTFVDOBFAGIKHVLHGISLLGGCPDSINAALLCRGEKNSIAINAGVL

ARGHNYTVIDPVEKLLAVGHYLESTVDIAESTRRIAASRIPADHWYLMAGFTAGNEKG

ELVVLGKNGSDYSAAVLAAGLKADCCSIWTDVDGVTCDPPROVPDARLLKSMSYQBAM

ELSYGGAKVLHPRTITPIAQCIPCLRIWTGNPQAFCTLIGASRDEDELPVKGISNLN

MAMPEYSGPGMKGMARVPRAARVFRAMSRARISVVLITGSSSEYSISFCVPOSDCVRAB
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        /protein_id="Aan78504.1"
/db_xref="C1:26106318"
/translaton="MVKVYAPSSANMSVGFDVLGAAVTPVDGALLGDVVTVEAAETF
SLANLGERADKL.PSSANMSVGFDVLGAAVTPVDGALLGDVVTVEAAETF
SLANLGERADKL.PSPRENTIVYCWERFCQELGKQIPVAMTLEKNMPTGSGLGSSACS
VVAALMAMNERCGKPLNDTRLLALMGELEGRISGSHYDNVAPCFLGGMQLMTERNDI
ISQQVPGFDSBULWVLAYPGRISGSHYRRDLGGRINGTRACYSRQ
PELAANLMKDVIAEPYRRELLBGFROARRAILPAQYRRDDCIAHGRHLAGFIHACYSRQ
PELAANLMKDVIAEPYRRELLBGFROARQAYBIGANASGISGSGPTLFALCDKPDTA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        /transl_table=11
/product="Threonine synthase"
/protein_id="AaN78505.1"
/db xref="GI:SG106319"
/translation="MKLYNLKDHNEQVSFAQAVTGGLGKNGGLFFPHDLPEFSLTEID
                                                                                   /translation-"mpyrekrraigcilrkicewksvrileaeccadhihmiveippr
msvsgfwgylkgksslmpyeqfgdlkfryrnrefwcrgyyvdtvgkntakiqdyikhq
leedkwgeqisipypgspftgrk"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        RAMQEEFYLELKEGLLEPLAVTERLAIISVVGDGMRTLRGISAKFFAALARANINIVA
LOGSSERSISSVVNNDDATGVRYMINDLRPROQVIEKTOIVGGGGGLEGDLKRQ
QSWLKNKHDDLRVCGVANSKALLTNVHGLNLENWOEELAQAKEPFNLGRLIRVKEYH
LLNPVIVDCTSSQAVADQYADFLREGFHVVTPNKKANTSSMDYYHQLRYAAEKSRRKF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  LYDRWYGAGLEVTENIQNILNAGDELMKFSGILSGSLSYIFGKLDEGMSFSEATTLAR
EMGYTEPDPRDDLSGMDVARKLLILARETGRELELADIEIEPVLPAEFNAEGDVAAFM
ANLSQLDNLFAARVARARDEGKVLRYVGNIDEDGVCRVKIAEVDSNDPLFKVKNGENA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   /function="enzyme; Amino acid biosynthesis: Threonine" /note="Escherichia coli K-12 ortholog: b0003; Escherichia coli 0157:H7 ortholog: 20003"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          /function="enzyme; Amino acid biosynthesis: Threonine" /note="Escherichia coli K-12 ortholog: b0004; Escherichia coli 0157:H7 ortholog: z0004"
                                                                                                                                                                                                                                                                                                         /jocus_tag="c0003"
/function="enzyme; Amino acid blosynthesis: Threonine"
/function="Bifunctional; Escherichia coli K-12 ortholog:
b0002; Escherichia coli 0157:H7 ortholog: z0002;
bifunctional; Homoserine dehydrogenase I"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                LAFYSHYYQPLPLVLRGYGAGNDVTAAGVFADLLRTLSWKLGV"
     /product="Hypothetical protein"
/protein_id="AAN78502.1"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 /product-"Homoserine kinase"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           /product="Aspartokinase I"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     /protein_id="AAN78503.1"
/db_xref="GI:26106317"
                                                         /db_xref="GI:26106316"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               /Iocus_tag="c0004"
/EC_number="2.7.1.39"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         /locus_tag="c0005"
/EC_number="4.2.3.1"
                                                                                                                                                                                                                        locus_tag="c0003"
35. .3510
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               /locus_tag="c0004"
3512. .4444
/gene="thrB"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           /locus_tag="c0005"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    /transl_table=11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                /codon_start=1
/transl_table=11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      /codon_start=1
                                                                                                                                                                                                                                                                               /gene="thrA"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   3512. .4444
/gene="thrB"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  4445. 5731
/gene="thrC"
                                                                                                                                                                                                    /gene-"thrA"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       4445. .5731
/gene="thrC"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       4445.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      gene
                                                                                                                                                                             gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            gene
                                                                                                                                                                                                                                                              CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        CDS
102890 GGCGTGTTCAGCCGGGCGATATGGTTCTACTCTCCCCGGCCTGTGCCTGATCAGT 102949
                                                                                                                      Escherichia coli CFT073

Bacteria, Proteobacteria; Gammaproteobacteria; Enterobacteriales;
Britandacteriaceae; Escherichia.

I (bases 1 to 300409)
Welch,R.A., Burland,V., Plunkett,G.D. III, Redford,P., Roesch,P.,
Rasko,D.A., Buckles,E.L., Liou,S.-R., Boutin,A., Hackett,J.,
Stroud,D., Mayhew,G.F., Rose,D.J., Zhou,S., Schwartz,D.C.,
Perna,N.T., Mobley,H.L.T., Donnenberg,M.S. and Blattner,F.R.

Extensive Mosiac Structure Revealed by the Complete Genome Sequence
of Uropathogenic Escherichia coli
                                                                                                                                                                                                                                                                                                                                            Bscherichia coli CFT073 section 1 of 18 of the complete genome. AE016755 AE014075
AE016755.1 GI:26106314
                                                                                      TCAAGAACTTCGAAGAACGCGGACGCCTGTTCGCCAAAGCCGTAGAGGAGCTAGCGTGAT 1398
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               /locus_tag="c5491"
/foctus_tag="c5491"
/fortion="leader; Amino acid biosynthesis: Threonine"
/note="Thr operon attenuator; Escherichia coli K-12
ortholog: b0001; Escherichia coli 0157:H7 ortholog: z0001"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              /note="Residues 2 to 125 of 125 are 94.35 pct identical to residues 29 to 152 of 152 from SwissProt.40 : >sp|057334|T200_SALTY Transposase for insertion sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             2 (bases 1 to 300409)
Welch,R.A., Burland,V., Plunkett,G.D. III, Redford,P., Roesch,P.,
Welch,R.A., Buckles,E.L., Liou,S.-R., Boutin,A., Hackett,J.,
Stroud,D., Mayhew,G.F., Rose,D.J., Zhou,S., Schwartz,D.C.,
Perna,N.T., Mobley,H.L.T., Donnenberg,M.S. and Blattner,F.R.
Direct Submission
Submitted (20-JUN-2002) Genetics Laboratory, University of
Wisconsin - Madison, 445 Henry Mall, Madison, WI 53706, USA
                                                                                                                                                                                                                                    103010 GCGTTTATCTCTCCCTCGAAAATGCCGCGCCTGCCAGATTCAGTATC 103061
                                                                                                                                                                                                 1399 GCTGTCGGTGTTGCGCCCCTTCCCGTCGCCGCTGTTGAGCCGGCACGGCATC 1450
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Proc. Natl. Acad. Sci. U.S.A. 99 (26), 17020-17024 (2002) 12471157
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  /translation="MKRISTTITTITITIGNGAG"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 /product="Thr operon leader peptide"
/protein_id="AAN78501.1"
/db_xreff="G1:26106315"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         /organism="Escherichia coli CFT073"
/mol_type="genomic DNA"
/strain="CFT073"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            'insertion_seq="IS1541A-like"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                /db_xref="taxon:199310"
190. .255
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       /locus_tag="c0002"
534. .911
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 /locus_tag-"c5491"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       /locus_tag="c0002"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          /transl_table=11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            /codon_start=1
/transl_table=11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                /codon_start=1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 element IS200"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             190. .255
/gene="thrL"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              190. .255
/qene="thrL"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  1. .300409
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      534. .911
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     repeat_region
                                                                                   1339
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           sonrce
                                                                                                                                                                                                                                                                                                                                                                                                                    DEFINITION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ORGANISM
                                                                                                                                                                                                                                                                                                                                                                                                                                                    ACCESSION
VERSION
KEYWORDS
SOURCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       JOURNAL
                                                                                                                                                                                                                                                                                                                                         RESULT 12
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   REFERENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             AUTHORS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           PUBMED
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  AUTHORS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 JOURNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        REFERENCE
                                                                                                                                                                                                                                                                                                                                                                AE016755
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        FEATURES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          TITLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          TITLE
```

101058

101110

259

319

379

```
|||||||
|101471 TCGCTATCCGTTTGGTTTACAACAGTATCGGCAAAACTGCGCATTTACGAAAACGC 101530
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             101531 AAAAGTTTGCGTGGTTAATGCTGATGATGCCCTTAACAATGCCGATTCGCGGTGCGGATGA 101590
                                                                                                                                                                                                                                                       TITGITGCIGGGIGGCGAIGGIAAAICGGCGGACTITAGCCCACTGGCGCGTTACCTGAA 101995
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1157 GCGCTTCTGCCGGGCGGTGGTACTGCTTGGCCGTGACGCCGGGCTGATTGCCCCAGGCACT 1216
                        140 CTTGCCTTTCGCCGTGGTCGATACCCGAGAGACCCGCGGAGCTGGCCACCCTGCGTGC
                                                                                                                                                                                                                                                                                                                                                                                        GGCGGTGGCCGCGGACAAGCGTGTCGCCGTCGGCGGCAACCTCGGCACCCCGGCGCTCGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      CTGCGATCGCCTCAACGCCGAGGTGGCGACCGTGCTGAACGTCAGCGAAGACCATATGGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             101642 GCAGGGCGAAACCTGGCTGCGGGTGAAAGGCGAGAAAGTGCTGAAGGAAAGGAAATGAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              101762 AGGGTTACCGCGTGCCAGCAGCCTGAAAGCGTTAACCACATTCACTGGTCTGCCGCATCG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 CCAGTATCCGCAGGTGGAAGTGCGTTGCGGCGAACTCGACGCCGAGTTCCTCTGCTCCGC
                                                                                                                                                                                  ------AAGCCGTAGAACGCCACACGGGCGGTCTGAATGATGAATGGCTGATGGCGGC
                                                                                                                                                                                                                       CCGCGAACTCTATGTCAGCCCCGGCTTGTCGCTGCGCACCCCTGCGCTGGTACAGGCCGC
                                                                                                                                                                                                                                                                                            CGCGAAAGGCGTGCGCATCTCCGGTGACATCGATCTTCGCCCCGCGAGGCGAAGGCCCC
                                                                                                                                                                                                                                                                                                                                                                     GATCGTCGCCATCACCGGTTCCAACGCGAAGAGCACCGTGACCACCCTGGTGGGCGGAAAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   CCTGCTGGCCGACGACATCGAGCTGTACGTGTTGGAGCTGTCGAGCTTCCAGCTGGAAAC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   TCGCTA---CGACGGCATGGCTGACTACCACCTGGCCAAGCACCGGATCTTCCGCGGTGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        CCGCCAGGTCGTGAATCGCGCCGATGCCCTGACCCGACCGCTGATCGCCGATACCGT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   GCCGTGCTGGTCGTTCGGCCTGAACAAGCCGGACTTCAAGGCTTTCGGCCTGATCGAGGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          797 AGACGCCAGAAGTGGCTTGGCGTTCCAGTTCGACAAGCTGCTGCCGGTTGGCGAACTGAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   GATCCGTGGCGCCCACAACTATTCCAACGCGCTCGCCGCGCTGGCGCTTGGGGCCATGCGGT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          917 CGGCCTGCCGTTCGACGCCATGCTCGGCGCGCTGAAGGCGTTTTCCGGCCTGGCTCATCG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   CTGCCAGTGGGTACGCGAGGGCAGGGCGTGAGCTACTACGACGATTCCAAGGCCACCAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              CGTCGGCGCCCCTGGCGGCGATCGAGGGGCTGGGTGCCGACATCGACGGCAAGCTGGT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       GCTGCTCGCCGCGGGGGCGCCAAGGGCGCCGATTTCCATGACCTGCGCGAGCCGGTCGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 200
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   620
                                                                                                                                                                                                                     260
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          560
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        677
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 737
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 857
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     977
80
                                                                                                                                              200
                                                                                                                                                                                                                                                                                            320
                                                                                                                                                                                                                                                                                                                                                                   380
                                                                                                                                                                                                                                                                                                                                                                                                                                            440
                                                                                                                                                                                                                                                                                                                                                                                                                                                                              101291
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         101822
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            1037
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               101882
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     1097
                                                                                                                                                                                                                                                   쉽
                                                                                                                                                                                                                                                                                                                         g
                                                                                                                                                                                                                                                                                                                                                                                              g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                          셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Qγ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         qq
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ద
                                g
                                                                        ŏ
                                                                                                       q
                                                                                                                                              δ
                                                                                                                                                                              g
                                                                                                                                                                                                                       δ
                                                                                                                                                                                                                                                                                          ŏ
                                                                                                                                                                                                                                                                                                                                                               οy
                                                                                                                                                                                                                                                                                                                                                                                                                                        δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       qq
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               \dot{\Omega}
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Qγ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           qq
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       合
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Dp
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ö
               TLAFKDFGGREMAQILTHIAGDKPVTILTATSGDTGAAVAHAFYGLDNVKVVILYPRG
KISPLOEKLFCTLGGNIETVAIDGDFDACQALVKQAFDDEELKVALGLNSANSINISR
                                                 LLAQICYYFEAVAQLPQEARNQLVVSVPSĞNFGDĹTAGLLAKSLGLPVKRFTAATNVN
TYQOTMRELKELQOSPKATQATLSNAMDVSQPNNMPKVEELFRKTWQLKRLGYAAVDDE
TYQOTMRELKELYSEPHAAVAYRALKDQLNPGEYGLFLGTAHPAKFKESVEAILGE
TLDLPKELAERADLPLLSHNLPADFAALRKLAMNHQ"
                                                                                                                                                                                                                                                                                          'translation="MEKNDREKGEILNKCGNLEIRIAENNNCRSHRVISGYRPITGND
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     /translation="MKKMQSIVLALSLVLVAPMAAQAAEITLVPSVKLQIGDRDNRGY
YWDGGHWRDHGWWKQHYEWRGNRWHPYGPPPSPRHNKHNDHRGDHRPGPDKHHR"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         /translation="MPDGNPALIFSDDVCQAPDDDRHDDHCACYGAAMAAVHMGASDC
LAIHNVVSTSRGRASDRHPSNSHDYHDRLSVILLTFGLA"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              /translation="MIIVAITGMAVTGATTAGGNNIMNGEALAGTHMDRRHRRAITST
MIIVAIIVRGLTNIIAKYQCRIAIRHYPALSGIDYKLNVVRSV"
complement(6301. .7077)
emlkldfytrsakilsafigdeipqeileervraafafpapyanyesdygclelfhgp
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           5;
                                                                                                                                                                                                                                                                                                                                                                                                                                        ortholog: b0005; Escherichia
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ortholog: b0006; Escherichia
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Length 300409
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           33;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             /product="Hypothetical protein yaax precursor"
/protein_id="AaN78507.1"
/db_xref="GI:26106321"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      DB 1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Score 286.4; DB 1;
Pred. No. 1.1e-25;
); Mismatches 576;
                                                                                                                                                                                                                                  'product="Hypothetical protein"
'protein_id="AAN78506.1"
'db_xref="G1:26106320"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                /transl_table=11
/product="Hypotchetical protein"
/protein.id="AAN78508.1"
/db_xref="GI:26106322"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         /product="Hypothetical protein"
/protein_id="AAN78509.1"
/db_xref="GI:26106323"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         /locus_tag="c0010"
/note="Escherichia coli K-12 |
coli 0157:H7 ortholog: 20006"
                                                                                                                                                                                                                                                                                                                                                                                                                 /locus_tag="c0007"
/note="Escherichia coli K-12
coli 0157:H7 ortholog: z0005"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         /product="Protein yaaA"
/protein_id="AAN78510.1"
/db_xref="G1:26106324"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       complement(6021. .6269)
/locus_tag="c0008"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            complement(6021. .6269)
/locus_tag="c0008"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         /locus_tag="c0010"
complement(6301. .7077)
                                                                                                                                          /locus_tag="c0006"
5799. .5948
                                                                                                                                                                              /locus_tag="c0006"
                                                                                                                                                                                                                                                                                                                                                             /locus_tag="c0007"
5945. .6241
/gene="yaax"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   'locus_tag="c0009"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              locus_tag="c0009"
                                                                                                                                                                                                                   'transl_table=11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            /transl_table=11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       transl_table=11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        /transl_table=11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ;
0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                            /codon_start=1
                                                                                                                                                                                                 'codon_start=1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                /codon_start=1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      /codon_start=1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         /codon_start=1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  19.8%;
54.0%;
                                                                                                                                                                                                                                                                                                                            5945. .6241
/gene="yaax"
                                                                                                                                                             . 5948
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          /gene="yaaA"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                /gene="yaaA"
                                                                                                                       5799. .5948
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               6060. .6323
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Query Match 19.8
Best Local Similarity 54.0
Matches 715; Conservative
                                                                                                                                                                                                                                                                                                           KRSNL"
                                                                                                                            gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       gene
                                                                                                                                                             CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           CDS
```

101290

499

439

101410

619

559

736

196

9/9

101701

916

856

101821

916

1036

```
/protein_id="CAA35933.1"
Adb_xxef="G1:424060"
Adb_xxef="G1:424060"
/db_xref="SW152-PROT:P14900"
/translation="MADYQGKNVVIIGLGLTGLSCVDFFLARGVTPRVMDTRMTPPGL
ACKPRAVERHTGSLNDFWILMAADLIVASPGIALAHPSLSAADAGIEFFCRE
AQAPIYAITGSRGKSTYTIVGEMAKAAGNVIGVGRIGLPALMLLDDECELYVLELS
SFQLETISSLQANAATILNVTEDHMDRYPFGLQQYRAAKLRIYENAKVCVVNADDALT
                                                                                                                                                                                                                                                                                                                                                                         MPIRGADERCVSFGVNMGDYHLNHQQGETWLRVÄGEKVLNVKEMKLSGQHNYTNALAA
LAADAAGLERASSLKALTTFTGLPHREDVLAHNGYRMINDSKATNYGSTEALNGL
HVDGTLHLLGGDGKSADFSPLARYLNGDNYRLYGFGRDGAQLAALREVAEQTETME
QAMRLLAPRVQPGDMVLLSPRCASLDQFKNFEQRGNEFARLAKELG
 TGNMNFASYLHIPYLRHAGELVIVCTAIVGAGLGFLWFNTYPAQVFMGDVGSLALGGA
LGIIAVLLRQEFLLVIMGGVFVVFTLSVILQVGSFKLRGQRIFFMAPIHHHYELKGWP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     1392
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1452
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ŝ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     TCGCTATCCGTTTGGTTTACAACAGTATCGTGCAGCAAAACTGCGCATTTACGAAAACGC 1812
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    319
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           379
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            440 GGCGGTGGCCGCGGACAAGCGTGTCGCCGTCGGCGGCAACCTCGGCACCCCGGCGCGCTCGA 499
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           CTGCGATCGCCTCAACGCCGAGGTGGCGACCGTGCTGAACGTCAGCGAAGACCATATGGA 619
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          677 CCGCCAGGTCGTGAATCGCGCCGATGCCCTGACCCGACCGCTGATCGCCGATACCGT 736
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         CTTGCCTTTCGCCGTGGTCGATACCCGAGAACCCGGCGGAGCTGGCCACCCTGCGTGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1393 AGAICTGATTGTCGCCAGICCCGGTATTGCACTGGCGCATCCATCCTTAAGCGCTGCCGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               1282 TGTGACGCCGCGCGTTATGGATACGCGTATGACTACCCG-
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             -----aagccgragaacgccacacacggcagrcrgaargargarggcrgarggcgc
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    CCGCGAACTCTATGTCAGCCCCGGCTTGTCGCTGCGCACCCCTGCGCTGGTACAGGCCGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   380 GATCGTCGCCATCACCGGTTCCAACGCGAAGAGCACCGTGACCACCCTGGTGGGCGAAAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    500 CCTGCTGGCCGACGACATCGAGCTGTACGTGTTGGAGCTGTCGAGCTTCCAGCTGGAAAC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            200 CCAGTATCCGCAGGTGGAAGTGCGGTTGCGGCGAACTCGACGCCGAGTTCCTCTGCTCCGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           TCGCTA----CGACGCCATGGCTGACTACCACCTGGCCAAGCACCGGGATCTTCCGCGGTGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           33;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Score 282; DB 1; Length 26
Pred. No. 1.1e-24;
0; Mismatches 610; Indels
                                                                     /note-"pot. -35 region"
1043. 1048
/note-"pot. -10 region"
1181. 1185
/note-"pot. ribosome binding site"
/note-"murb gene product (AA 1-438)"
/codon_start-1
                                                                                                                                                                                                                                                                                                                                                                                                                                                  670 t
                                        EPRVIVRFWIISLMLVLIGLATLKVR
                                                                                                                                                                                                                                                                                                                                                                                                                                                  777 g
                                                                                                                                                                                                                              /transl_table=11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               =
=
=
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Query Match
Best Local Similarity 53.2%;
Matches 731; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     140
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              80
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               1341
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        1513
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           260
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   620
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     1753
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    260
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           320
                                                         promoter
                                                                                            promoter
                                                                                                                                                                                                                                                                                                                                                                                                                                                BASE COUNT
ORIGIN
                                                                                                                                 RBS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              염
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  윰
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          á
                                                                                                                                                ----GCCCGGAAGTGGCAGAACAAACCGAAGCAGGAGGGGATGCGTTGC 102109
                                                                                                                                                                                                                          CGAGCTGGCCCGCGAAGGCGATGCGGTGCTGTTGTCGCCCGGCCTGCGCGCGAGCCTGGACAT 1336
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                /translation="minwilbehivkyysgenvesylffraivslitalfisimmgprm
IAHLQKLSFGQVVRNDGPESHFSKRGTPTMGGIMILTAIVISVLLMAYPSNPYVWCVL
VVLVGYGVIGFVDDYRKVVRKDTKGLIARWKYFWMSVIALGVAFALYLAGKDTPATQL
VVPFFKDVMPQLGLFYILLAYFVIVGTGNAVNITDGLDGLAIMPTVFVAGGFALVAWA
                                                                                                                                                                                                                                                                                                                                                                                                             BCT 12-SEP-1993
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Direct Submission
Submitted (15-MAR-1990) Flouret B., URA 1131 du Centre National de
La Recherche Scientifique, C N R S, Blochimie Moleculaire et
Cellulaire. Batiment 432 Universite Paris·Sud, 91405 Orsay, France
Sequence independently determined by [3], but authors accept
sequence [1] as definitive.
Location/Qualifiers
1. 2608
/organism="Escherichia coll"
/mol_type="genomic DNA"
/db_xref='taxon:562"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Enterobacteriaceae; Escherichia.

1 (bases 1 to 2608)

1 (bases 1 to 2608)

Nucleotide sequence involving murD and an open reading frame ORF-Y spacing murF and ftsW in Escherichia coli

Nucleic Acids Res. 18 (4), 1058 (1990)
                                                                                                                                                                                                                                                                                                                                                                                                                                                            X51584.1 GI:42058 membrane protein; murD gene; UDP-N-acetylmuramoyl-L-alanyl-D-glutamate synthetase; unidentified
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Bacteria; Proteobacteria; Gammaproteobacteria; Enterobacteriales
                                                                                                                                                                                                    GTTCAAGAACTTCGAAGAACGCGGACGCCTGTTCGCCAAAGCCGTAGAGGAGCTAGCGTG
                                                    GGGCAACGCGGTACCGCTGCTGCGCTCGCAACGCTGGACGAAGCAGTCCGGCAGGCCGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Direct Submission
Submitted (02-JAN-1989) Ikeda M., Institute of Applied
Microbiology, The University of Tokyo, 1-1-1 Yayoi, Bunkyo-ku,
                                                                                                                                                                                                                                                                                                                                                                                                             (EC 6.3.2.9)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      site"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    /note="pot. ribosome binding
                                                                                                                                                                                                                                                                                                                                                                                                                             ORF-Y
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                /db_xref="SWISS-PROT:P15876"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  111. .1193
/note="ORF-Y (AA 1-360)"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           /protein_id="CAA35932.1"
/db_xref="GI:42059"
                                                                                                                                                                                                                                                                                                                                                                                                        2608 bp
Escherichia coli murb gene and C
X51584 X52117
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              /transl_table=11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         /codon_start=1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Tokyo 113, Japan
3 (bases 26 to 1354)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    2 (bases 1 to 2608)
Ikeda, M.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              /map="2min"
98. .102
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Escherichia coli
Escherichia coli
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      reading frame.
                                                                                                                                                                                                                                                                                                               102230 ATGC 102233
                                                                                                                                                                                                                                                                            ATGC 1400
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Flouret, B.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         2179861
                                                    1217
                                                                                                                         1277
                                                                                                                                                                                                    1337
                                                                                                                                                                                                                                                                            1397
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        source
                                                                                                                                                                                                                                                                                                                                                                                                                         DEFINITION
                                                                                                                                                                                                                                                                                                                                                                                                                                            ACCESSION
VERSION
KEYWORDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ORGANISM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              AUTHORS
TITLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           TITLE
JOURNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                JOURNAL
MEDLINE
                                                                                                                                                                                                                                                                                                                                                                       RESULT 13
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       TITLE
JOURNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           REFERENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         AUTHORS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        AUTHORS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     PUBMED
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          REFERENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    REFERENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 RBS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   FEATURES
                                                                                                                                                                                                                                                                                                                                                                                        ECMUROY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                COMMENT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     SOURCE
               음
                                                    ò
                                                                                    g
                                                                                                                         ò
                                                                                                                                                            a
                                                                                                                                                                                                    ð
                                                                                                                                                                                                                                 g
                                                                                                                                                                                                                                                                          ð
                                                                                                                                                                                                                                                                                                             셤
```

```
Valuateric, G. 111.

Direct Submission

Submitted (13-OCT-1998) Laboratory of Genetics, University of Wisconsin, 445 Henry Mall, Madison, WI 53706, USA
This sequence was determined by the E. coli Genome Project at the University of Wisconsin-Madison (Frederick R. Blattner, director). Supported by NIH grants HG00301 and HG01428 (from the Human Genome Project and NCHGR). The entire sequence was independently determined from E. coli K12 strain MG1655. Predicted open reading frames were determined using GeneMark software, kindly supplied by Mark Borodovsky, Georgia Institute of Technology, Allanta, GA, 30332 [e-mail: mark@amber.gatech.edu]. Open reading frames that have been correlated with genetic loci are being annotated with CG site Nos. unique ID nos. for the genes in the E. coli Genetic Stock Center (CGSC) database at Yale University, kindly supplied by Mary Berlyn. A public version of the database is accessible (http://wgw.genetics.du). Annotation of the genome sequence more useful by correlating it with other data. Comments to the authors are appreciated. Updated information will be available at the E. coli Genome Project's World wide Web site

(http://www.genetics.wisc.edu). *** The E. coli K12 sequence and its annotations are periodically updated; this is version M54. No sequence changes. Annotational assignments courtesy of Monica Riley; added promoters, protein binding sites, and repeated sequences described in reference 1. The unique numeric identifiers beginning with a lowercase 'b' assignment coency gene prodering and products; all new functional assignments coenced of labels. This should allow them to be searched for in Entrez as gene pages.
                             Direct Submission
Submitted (16-79A-1997) Guy Plunkett [II, Laboratory of Genetics,
University of Wisconsin, 445 Henry Mall, Madison, WI 53706, USA.
Email: ecoli@genetics.wisc.edu Phone: 608-262-2534 Fax:
                                                                                                                                                                                         Direct Submission
Submitted (02-SEP-1997) Guy Plunkett III, Laboratory of Genetics,
University of Wisconsin, 445 Henry Mall, Madison, WI 53706, USA.
Email: ecoli@genetics.wisc.edu Phone: 608-262-2534 Fax:
608-263-7459
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  /function="leader; Amino acid biosynthesis: Leucine"
//note="f28; 100 pct identical to LPL_ECOLI SW: P09149"
/codon_start=1
/ransl_table=11
/product="leu operon leader peptide"
/protein_id="MAG73186.1"
/translation="MTHTVERIGILLINASSLRGRRVSGIQH"
/complement(197, .226)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               complement(201. .221)
//note="No predicted promoter"
/bound_moiety="Lexa predicted site"
complement(201. .221)
/note="central position to predicted promoter: -0.5"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        7
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     complement(197. .226)
/note="factor Sigma70; promoter leu; documented
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      coli K12"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          /organism="Escherichia c/mol_type="genomic DNA" /strain="K12"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                /db_xref="taxon:83333"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     /note="synonym: b0075"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 complement(77. .163)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          /sub_strain="MG1655"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           complement(77. .163)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Location/Qualifiers
                                                                                                                                                                                                                                                                                                         4 (bases 1 to 21757)
Plunkett, G. III.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               'gene="leuL"
                                                                                                                                           3 (bases 1 to 21757)
Blattner, F.R.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 'gene="leul"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            at83735"
                                                                                                                       608-263-7459
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    names.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  protein_bind
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      protein_bind
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  promoter
                               TITLE
JOURNAL
                                                                                                                                                                                           TITLE
JOURNAL
       AUTHORS
                                                                                                                                                                     AUTHORS
                                                                                                                                                                                                                                                                                                                                      AUTHORS
                                                                                                                                                                                                                                                                                                                                                        TITLE
JOURNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         gene
                                                                                                                                             REFERENCE
                                                                                                                                                                                                                                                                                                            REFERENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        FEATURES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           CDS
                                                                                                                                                                                                                                                                                                                                                                                                                              COMMENT
                                                                                                                                                                                                                                                                                   2043
                                                                                                                                                                                                                                                                                                                                                                              2103
  1813 GAAAGTTTGCGTGGTTAATGCTGATGATGCCTTAACAATGCCGATTCGCGGTGCGGATGA 1872
                                                                         CTGCCAGTGGGTACGCGAGCGCAGGGCGTGAGCTACTACGACGATTCCAAGGCCACCAA 1036
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            1097 GCTGCTCGCCGGCGGAGACGCCAAGGGCCCGATTTCCATGACCTGCGCGGAGCCGGTCGC 1156
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          1276
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1336
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     l (bases 1 to 21757)
Blattner, F.R., Plunkett, G. III, Bloch, C.A., Perna, N.T., Burland, V., Riley, M., Collado-Vides, J., Glasner, J.D., Rode, C.K., Mayhew, G.F., Gregor, J., Davis, N.W., Kirkpatrick, H.A., Goeden, M.A., Rose, D.J., The complete genome sequence of Escherichia coli K-12
Science 277 (5331), 1453-1474 (1997)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     AE000118 21757 bp DNA linear BCT 01-DEC-2000
Escherichia coli K12 MG1655 section 8 of 400 of the complete
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          2218 TITGITGCIGGGIGGCGAIGGIAAAICGGCGGACTIIAGCCCCACIGGCGCGTIACCIGAA 2277
                                                                                                                                                                                                                                                                                                                                  916
                                                                                                                                                                                                                                     916
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Bacteria; Proteobacteria; Gammaproteobacteria; Enterobacteriales;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      917 CGGCCTGCCGTTCGACGCCATGCTCGGCGCGCTGAAGGCGTTTTCCGGCCTGGCTCATCG
                                                                                                                                                                                                                                                                                                                                                                         2044 AGGGTTACCGCGTGCCAGCAGCCTGAAAGCGTTAACCACATTCACTGGTCTGCCGCATCG
                                                                                                                                                                                                                                                                                                                                                                                                                                                  1104 CTTTGAAGTTGTGCTGGAGCATAACGCGTACGTTGGATTAACGATTCGAAAGCGACCAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             797 AGACGGCCAGAAGTGGCTGGCGTTCCAGTTCGACAAGCTGCCGGGTTGGCGAACTGAA
                                                                                                                                                                                                                                  CGTCGGCGCCCCTGGCGGCGATCGAGGGGCTGGGTGCCGACATCGACGCCAAGCTGGT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           1157 GCGCTTCTGCCGGGCGGTGGTACTGCTTGGCCGTGACGCCGGGCTGATTGCCCAGGCACT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   1217 GGGCAACGCGGTACCGCTGGTGCGCGTCGCAACGCTGGACGAAGCAGTCCGGCAGGCCGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ----GCCCGGAAGTGGCAGAACAAACGAAACTATGGAACAGGCGATGCGCTTGCTGGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               1277 CGAGCTGGCCCGCGGAAGGCGATGCGGTGCTGTTGTCGCCGGCCTGCGCGAGCCTGGACAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            GTTCAAGAACTTCGAAGAACGCGGACGCCTGTTCGCCAAAGCCGTAGAGGAGCTAGCGTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            GCCGTGCTGGTCGTTCGGCCTGAACAAGCCGGACTTCAAGGCTTTCGGCCTGATCGAGGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ATGCTGTCGGTGTTGCGCCCCTTCCCGTCGCCGCTGTTGAGCCGGCACGGCATC 1450
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Enterobacteriaceae; Escherichia
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  GI:1786262
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          (bases 1 to 21757)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Escherichia coli K12
Escherichia coli K12
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    AE000118 U00096
AE000118.1 GI:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           97426617
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 9278503
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 1037
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        2452
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      1397
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  2512
                                                737
                                                                                                                                                                                                                                  857
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   2337
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          1337
                                                                                                                                                                                                                                                                                                                                                                                                                     977
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           SOURCE
ORGANISM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        DEFINITION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        REFERENCE
AUTHORS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      MEDLINE
PUBMED
REFERENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ACCESSION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          TITLE
JOURNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         RESULT 14
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  VERSION
KEYWORDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            AE000118
                                                                                                                                      à
                                                                                                                                                                                  셤
                                                                                                                                                                                                                                  å
                                                                                                                                                                                                                                                                         g
                                                                                                                                                                                                                                                                                                                          ă
                                                                                                                                                                                                                                                                                                                                                                      셤
                                                                                                                                                                                                                                                                                                                                                                                                                     ŏ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               õ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     g
셤
                                              ð
                                                                                       셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             셤
```

```
13628 TGTGACGCCGCGCGTTATGGATACGCGTATGACACCGCCTGGCCTGGATAAATTACCCG- 13686
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      13858
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          TTGHKGOIKRALQTIVAAKKPVYYGGGAITAGCHQOLKETYEALILEYYCSLAGIGA
FPATHRQALGMLGMHGTYEANMTMHNADVIFAVGVREDDRTTNNLAKYCPNATVLHID
IDPGISKTYTADIFIYGDARQYLEGMLELLSQESAHQPLDBIRDWROQIEGMRARQC
LKYDTHSEKIKPQAVIETLMRLFKGBAYTSDVGQQQMFARALYYFPEKPRRTINSGGL
GMGFGELAALGYARALPEETVYCTTGDGSIQMNIQBLSTALQYELPVYVNINNRYL
GMYKQMQDMIYGGRHSQLYBPVRLAERYGHVGISHPHELESKLSEALEQVR
NNRLVFVDYTYDGSEHVYPMQIRGGGMDEMMLSKTERT"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        /translation="memsiraanciskigrimcpthffrotvroamemisgaemvvrsi
IDQGVKQVFGYPGGAVLDIYDALHTVGGIDHVLVRHEQAAVHMADGLARATGEVGVVL
                                                                                                                                                                                                                                                      VTSGPGATNAITGIATAYMDSIPLVVLSGQVATSLIGYDAFQECDMVGISRPVVKHSF
LVKQTEDIPQVLKKAFWLAASGRPGPVVVDLPKDILNPANKLPYVWPESVSMRSYNPT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            259
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           379
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            GGCGGTGGCCGCGGACAAGCGTGTCGCCGTCGGCGAACCTCGGCACCCCGGCGCGTCGA 499
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        619
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    /note="factor Sigma70; promoter ilvIHpl; documented+1 at
85597"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  /product="acetolactate synthase III, valine sensitive,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     560 CTGCGATCGCCTCAACGCCGAGGTGGCGACCTGCTGAACGTCAGCGAAGACCATATGGA
                       /note-"o604; 98 pct identical (1 gap) to 522 residues fromILVI_ECOLI SW: P00893 (566 aa)"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      CTTGCCTTTCGCCGTGGTCGATACCCGAGAACCCGCCGGAGCTGGCCACCCTGCGTGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            200 CCAGTATCCGCAGGTGGAAGTGCGTTGCGGCGAACTCGACGCCGAGTTCCTCTGCTCCGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  260 CCGCGAACTCTATGTCAGCCCCGGCTTGTCGCTGCGCACCCCTGCGCTGGTACAGGCCGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           320 CGCGAAAGGCGTGCGCATCTCCGGTGACATCGATCTCTTCGCCCGCGGGGGGGAGGCCCC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   380 GATCGTCGCCATCACCGGTTCCAACGCGAAGAGCACCGTGACCACCCTGGTGGGGGAAAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               500 CCTGCTGGCCGACGACATCGAGCTGTACGTGTTGGAGCTGTCGAGCTTCCAGCTGGAAAC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               /note-"central position to predicted promoter:156.5"
/bound_moiety-"Lrp predicted site"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    33;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      19.4%; Score 282; DB 1; Length 21757;
Llarity 53.2%; Pred. No. 6.6e-25;
Conservative 0; Mismatches 610; Indels 33
                                                                                                                                                         /protein_id="AAC73188.1"
/db_xref="G1:1786265"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             /note="synonym: b0078"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             3812, .4303
/gene="ilvH"
/EC_number="4.1.3.18"
                                                                                               /transl_table=11
                                                                                                                                         large subunit"
                                                                                                                                                                                                                                                                                                                                                                                                                                                       1998. .2012
/gene="ilvi"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        /gene="ilvH"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           2017. . 2045
/gene="11vI'
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Query Match
Best Local Similarity
Matches 731; Conserv
                                                                                                                                                                                                                                                                                                                                                                                                                                                     protein_bind
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         440
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      140
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             promoter
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      13687
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        合
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     õ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               /translation="WTHSTAMDSVEIRTRIEWESEFYSFCFFLFYMHDKSYSSGLFLC
IPIRERELSVTVELSMPEVQTDHPETAELSKPOLRMYDLNLLTVFDAVMQEQNITRAA
HTCHNSQPAYSNAVARAKVMFNDELEVRYGRCIOFPRARFOLFGSVRQALQIVONELP
GSGFPASSERVFHLCVGSPLDSILTSQIYNHIEQIAPVIHYFKSSLNQNTEHQLRY
QETERYISYEDFHREPETSYPLFKDEWYLVASKNHPFIKGPLLKHDYNEGIRAAVSLD
RFASFSQPWYDTVDKQASIAYQGMAMMSVLSVVSQTHLVAIAPRMLAEEFAESLELQV
LPLPLKQUNSTCYLSWHEAAGRDKGHQWMEEQLVSICKR"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       24
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    /product="probable transcriptional activator for leuABCD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        at
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1838. 1866
/note="factor Sigma70; promoter ilvIHp3; documented+1 at
85420"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               at
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      function-"putative regulator; Amino acid biosynthesis:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         and
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 /EC_number="4.1.3.18"
/function="enzyme; Amino acid biosynthesis: Isoleucine,
                                                                                                                                                                                                                                               /note="factor Sigma70; predicted +1 start at 84042" complement(519. .537)
/note="central position to predicted promoter: -319.5"
/bound_molety="Tyrk predicted site"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      1802. .1816
/note="central position to predicted promoter: -39.5"
/bound_molety="Lrp predicted site"
1813. .1839
/note="factor Sigma70; promoter ilvIHp4; documented+1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 1955. 1984
/note-"factor Sigma70; promoter ilvIHp2; documented+1
85534"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         /note="0373; 100 pct identical to LEUO_ECOLI SW:
P10151(290 as) but contains 59 additional N-ter as and
C-term residues; 100 pct identical to PIR: S40589 but
contains 24 additional C-term residues"
                                                                                                                                                         460. .474
/note="central position to predicted promoter: -28.5"
/bound_molety="Lrp predicted site"
462. .490
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    /note="central position to predicted promoter:73.5" [2000d_molety="Lrp predicted site" [1949. 1963]. [2000d_molety="Lrp predicted promoter:107.5" [2000d_molety="Lrp predicted site"].
                                                                                                               /note="central position to leuABCD promoter: -156.5"
Dound_molety="Lrp documented site"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    note="central position to predicted promoter: -8.5"
Dound_moiety="Lrp predicted site"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            "note="central position to predicted promoter:136.5"
Dound_moiety="Lrp predicted site"
                                                                                                                                                                                                                                                                                                                                /bound_moiety="LexA predicted site"
complement(354. .368)
/note="No predicted promoter"
/bound_moiety="Lrp documented site"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         /protein_id="AAC73187.1"
/db_xref="GI:1786264"
                                                                                                                                                                                                                                                                                                                                                                                                                                                     note-"synonym: b0076"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  note="synonym: b0077"
                                                                                             complement(354. .368)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           /transl_table=11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     1978. .1992
/note="central
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      codon_start=1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               "dene="leuo"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1995. .3809 /
/gene="11vI"
                                                                                                                                                                                                                                                                                                                                                                                                                             'gene-"leu0"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        1995. .3809
/gene="ilvi"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               1833. .1847
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Leucine"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    "note-"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        35394"
                                                                                                                                                                                                                                                                                                                                       protein_bind
                       protein_bind
                                                                                        protein_bind
                                                                                                                                                           protein_bind
                                                                                                                                                                                                                                                                         protein_bind
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          protein_bind
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             protein_bind
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               protein_bind
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  protein_bind
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     protein_bind
                                                                                                                                                                                                                            promoter
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              promoter
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  promoter
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    promoter
                                                                                                                                                                                                                                                                                                                                                                                                             gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                       CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       CDS
```

```
14234 GAAAGTTTGCGTGGTTAATGCTGATGATGCCTTAACAATGCCGATTCGCGGTGCGGATGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 13643 CGTCATTATCGGCCTGGGCCTCACCGGGCTTTCCTGCGTGGACTTTTTCCTCGCTGGGG
                                                                                                                                                                                                                                                                                                           140 CTTGCCTTTCGCCGTGGTCGATACCCGAGAGAACCCGCCGGAGCTGGCCACCCTGCGTGC
                                                                                                                                                                                                                                                                                                                                                                              200 CCAGTATCCGCAGGTGGAAGTGCGTTGCGGCGAACTCGACGCCGAGTTCCTCTGCTCCGC
                                                                                                                                                                                                                                                                                                                                                                                                   ------AAGCCGTAGAACGCCACACGGCAGTCTGAATGAATGATGGCTGATGGCGGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                260 CCGCGAACTCTATGTCAGCCCCGGCTTGTCGCTGCGCACCCCTGCGCTGGTACAGGCCGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                       320 CGCGAAAGGCGTGCGCATCTCCGGTGACATCGATCTTCGCCCGCGAGGCGCAAGGCCCC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 13874 TGATGCCGGAATCGAAATCGTTGGCGATATCGAGCTGTTCTGTCGCGGAAGCACAAGCACC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 GATCGTCGCCATCACCGGTTCCAACGCGAAGAGCACCGTGACCACCCTGGTGGGCGAAAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  GGCGGTGGCCGCGGACAAGCGTGTCGCCGTCGGCGGCAACCTCGGCACCCCGGCGCTCGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      500 CCTGCTGGCCGACGACATCGAGCTGTACGTGTTGGAGCTGTCGAGCTTCCAGCTGGAAAC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      14054 GCTACTGGATGATGAGTGTGAACTGTACGTGCTGGAACTGTCGAGCTTCCAGCTGGAAAC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       CTGCGATCGCCTCAACGCCGAGGTGGCGACGTGCTGAACGTCAGCGAAGACCATATGGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       620 TCGCTA---CGACGGCATGGCTGACTACCACCTGGCCAAGCACCGGATCTTCCGCGGTGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         14174 TCGCTATCCGTTTGGTTTACAACAGTATCGTGCAGCAAAACTGCGCATTTACGAAAACGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          677 CCGCCAGGTCGTGGTGAATCGCGCCGATGCCCTGACCCGACCGCTGATCGCCGATACCGT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            GCCGTGCTGGTCGGTTCGGCCTGAACAAGCCGGACTTCAAGGCTTTCGGCCTGATCGAGGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               797 AGACGGCCAGAAGTGGCTGGCGTTCCAGTTCGACAAGCTGCTGCCGGTTGGCGAACTGAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  GATCCGTGGCGCCCACAACTATTCCAACGCGCTCGCCGCGCTGGCGCTGGGCCATGCGGT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    917 CGGCCTGCCGTTCGACGCCATGCTCGGCGCGCTGAAGGCGTTTTCCGGCCTGGCTCATCG
                                                                                                                                                                          Length 28277;
                                                                                                                                                                        Score 282; DB 6; Length 28
Pred. No. 6.2e-25;
0; Mismatches 610; Indels
Patent: WO 0149775-A 2 12-JUL-2001;
Avi Biopharma, Inc. (US)
Location/Qualifiers
                                               1. .28277
/organism="Escherichia co.
/mol_type="genomic DNA"
/db_xref="taxon:562"
a 6725 c 7993 g 6845
                                                                                                                                                                    19.4%;
milarity 53.2%;
Conservative 0
                                                                                                                                                                                        al Similarity
731; Conserv
                                                                                                                        ø
                                                                                                                      6714
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       260
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  440
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            737
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  857
                                                                                                                                                                          Query Match
                                                        sonrce
                                                                                                                        BASE COUNT
ORIGIN
   JOURNAL
                                     FEATURES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           qq
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Db
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Ωp
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  g
                                                                                                                                                                                                                                                                       g
                                                                                                                                                                                                                                                                                                             ö
                                                                                                                                                                                                                                                                                                                                           셤
                                                                                                                                                                                                                                                                                                                                                                            ò
                                                                                                                                                                                                                                                                                                                                                                                                          a
                                                                                                                                                                                                                                                                                                                                                                                                                                                δy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                              g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               οy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                οχ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ö
                                                                                                                                                                                                                                                             14330 ACTITCCGGCAGCATAACIACACCCATGCGCTGGCGCCCTGGCGCGCGGCAGATGCTGC 14389
                                                                                                                                                                                                                                                                                                                                                                                                                                                                   14039 CACCTCCAGCTTACAGGCGGTAGCAGCGACCATTCTGAACGTGACTGAAGATCATATGGA 14098
                                                                                                                                      14159 GAAAGTTTGCGTGGTTAATGCTGATGATGCCTTAACAATGCCGATTCGCGGTGCGGATGA 14218
                                                                                                                                                                                                        14219 ACGCTGCGTCAGCTTTGGCGTCAACATGGGTGACTATCA------CCTGAATCATCA 14269
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               14510 CGTCGCCAGTACGGAAGCGGCGCTGAATGGCCTG-----CACGTAGACGGCACACTGCA 14563
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1277 CGAGCTGGCCCGCGAAGGCGATGCGGTGCTGTTGTCGCCGGCCTGCGCGAGCCTGGACAT 1336
                                                                                                                                                                                                                                                                                                                                                                                                                                              CTGCCAGTGGGTACGCGAGCGCCAGGGCGTGAGCTACTACGACGATTCCAAGGCCACCAA 1036
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               PAT 15-AUG-2001
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Escherichia coli
Escherichia coli
Bacteria; Proteobacteria; Gammaproteobacteria; Enterobacteriales;
Enterobacteriaceae; Escherichia.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   CGGCCTGCCGTTCGACGCCATGCTCGGCGCGCTGAAGGCGTTTTCCGGCCTGGCTCATCG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               CGTCGGCGCCCCCTGGCGCGATCGAGGGGCTGCTGCCGACATCGACGGCAAGCTGGT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               1097 GCTGCTCGCCGGCGGAGACGCCAAGGGCCCGATTTCCATGACCTGCGCGAGCCGGTCGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  1217 GGGCAACGCGGTACCGCTGGTGCGCTGCAACGCTGGACGAAGCAGTCCGGCAGGCCGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       GTTCAAGAACTTCGAAGAACGCGGACGCCTGTTCGCCAAAGCCGTAGAGGAGCTAGCGTG
                                                        GCCGTGCTGGTCGTTCGGCCTGAACAAGCCGGACTTCAAGGCTTTCGGCCTGATCGAGGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ----GCCCGGAAGTGGCAGAACAAACTATGGAACAGGCGATGCGCTTGCTGGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         14798 GTTCAAGAACTTTGAACAACGAGGCAATGAGTTTGCCCGTCTGGCGAAGGAGTTAGGTTG
                                     TCGCTA----CGACGGCATGGCTGACTACCACCTGGCCAAGCACCGGATCTTCCGCGGTGC
                                                                                                    677 CCGCCAGGTCGTGGTGAATCGCGCCGATGCCCTGACCCGACCGCTGATCGCCGATACCGT
                                                                                                                                                                                                                                         797 AGACGCCAGAAGTGGCTGGCGTTCCAGTTCGACAAGCTGCCGGTTGGCGAACTGAA
                                                                                                                                                                                                                                                                                                             GATCCGTGGCGCCCACAACTATTCCAACGCGCTCGCCGCGCTGGCGCTGGGCCATGCGGT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 GCGCTTCTGCCGGGCGGTGGTACTGCTTGGCCGTGACGCCGGGCTGATTGCCCAGGCACT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ATGCTGTCGGTGTTGCGCCCCTTCCCGTCGCCGCTGTTGAGCCGGCACGGCATC 1450
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Antisense antibacterial cell division composition and method
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               linear
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               DNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Sequence 2 from Patent W00149775.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               AX191720.1 GI:15209889
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Iversen, P.L
                                   620
                                                                                                                                                                                                                                                                                                           857
                                                                                                                                                                                                                                                                                                                                                                            917
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     1337
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         1397
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        14858
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  1157
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               1037
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    14683
                                                                                                                                                                                                                                                                                                                                                                                                                                            977
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             DEFINITION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ACCESSION
VERSION
KEYWORDS
SOURCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ORGANISM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            RESULT 15
AX191720
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  REFERENCE
AUTHORS
TITLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             LOCUS
                                                                   g
                                                                                                                                                                                                      업
                                                                                                                                                                                                                                       οy
                                                                                                                                                                                                                                                                      g
                                                                                                                                                                                                                                                                                                         ò
                                                                                                                                                                                                                                                                                                                                                                         ò
                                                                                                                                                                                                                                                                                                                                                                                                          g
                                                                                                                                                                                                                                                                                                                                                                                                                                            à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                        g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             원
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       õ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     셤
                                   õ
                                                                                                    ŏ
                                                                                                                                 g
                                                                                                                                                                      ŏ
                                                                                                                                                                                                                                                                                                                                         쉽
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ò
```

14233

736

9/9

14404

916

916

856

14113

619

13813

13702

139

5

33;

13761

13873

319

379

13993

Search completed: August 14, 2003, 03:24:00 Job time : 5318 secs